DEPARTMENT OF HEALTH AND SOCIAL SECURITY

Medical Manpower—the next twenty years

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Medical Manpower—the next twenty years

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Foreword by the Secretary of State

This paper is another exercise in open government. It presents, for public discussion, information we have collected about the future prospects for the demand and supply of doctors and contains the most comprehensive statistical detail on the subject of medical manpower ever published. I do not expect everyone to agree with what we have said but we hope to create a better informed debate in the future than we have had in the past.

Every few years we need to look ahead and see how many doctors we will need to help maintain the gradual improvement in our standard of health care. Because of the length of medical training, we must look twenty years ahead in deciding how many students should enter medical schools over the next decade and do our best neither to under-estimate nor over-estimate the demand for their services once they are fully trained.

Over the next twenty years we can expect many changes in medical practice. For example, it has been suggested that some of the work of doctors could be taken over by para-medical staff or even by computers. Certainly medicine will become less and less a male-dominated profession. Our major task will be to find ways of persuading doctors to train for the specialties where they are most needed and to work in what are now the under-staffed parts of the country. I have asked the Department to study these and other issues raised in the paper and we plan to carry out or to commission relevant research. We hope others outside the Government will do the same.

Over the past ten years we have increased the number of students entering medical school from around 2,500 in 1968 to 3,700 this year. The number of entrants will grow to about 4,000 in the early nineteen eighties. It will remain at this level unless discussions on this paper establish that a change is necessary.

We are distributing this paper widely to those in the health authorities and the medical profession who have an interest in the subject and to those who represent consumers of health care. We will want to discuss it with all of them and we hope that those who comment on it will let the Royal Commission on the National Health Service know their views. The Government will take a decision about the future medical manpower needs of the country when they have heard what everyone, including the Royal Commission, has to say.

DAVID ENNALS

Secretary of State for Social Services

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Introduction

1. It is generally accepted that the number of places in British medical schools should be set in accordance with the best estimate that can be made of the number of doctors the country will wish to employ in future years. There has been a substantial increase in the number of places in recent years from under 2,000 in the early 1960s, with a current target of just over 4,000 places in the early 1980s. No decision has yet been taken on whether there should be any change in the intake of students after this target is achieved, and it now seems timely to start discussion on where our present medical manpower policies are leading us and whether any changes in student intake are required. The purpose of the present paper is to promote such discussion and to provide the background information on which it may be based.

2. This paper is not an attempt to assess the total demand for doctors in future years. It aims to set out as a basis for debate the assumptions underlying the present medical manpower policy and the broad developments that could be expected to flow from that policy. Another aim of this paper is to identify areas where further study or research is needed.

3. It is important to recognise the relevant time scale. The undergraduate medical course takes at least five years, and the requirements laid down for specialist training by educational bodies generally amount to eight years postgraduate training. When vocational training for general practice becomes mandatory, the postgraduate education of a general practitioner will take at least four years. This means that to a large extent the number of doctors who will be available for career posts over the next 10 years is already determined by the number in training now, and that the question of the appropriate medical school intake must be looked at in the light of the need for doctors in the late 1980s and on to the 1990s. This very long time span produces difficulties – the present staffing position reflects the decisions taken in the 1950s more than those of the 1960s – and it is important not to let short-term issues or the experience of the past year or two dominate the discussion. In Section VI we examine certain of the issues which will need to be resolved over the next 10 years, but the main emphasis of this paper is on the period beyond this.

4. We begin with a brief historical note on earlier attempts to look at medical manpower and go on to consider some of the difficulties of forecasting in Section II, while Section III discusses the constraints imposed by availability of resources. Section IV considers the factors determining the demand for doctors, and Section V gives projections of

future supply under various assumptions while the technical details of the projection are given in Appendix C. Debate on this subject is often hampered by lack of information; detailed information is therefore set out in Appendix A on the present stock of doctors and changes over time, medical school input and output, migration of doctors, and population. Comparisons with other countries are considered in Appendix B.

5. It has been usual to consider questions of doctor numbers on a Great Britain rather than a United Kingdom basis, and unless the contrary is stated all figures quoted in this paper will refer to Great Britain. The Northern Ireland Medical Manpower Advisory Committee has recently considered the desirable intake of medical students to Queen's University and has accepted that the present intake of 150 should be maintained over the next four years, and this has been agreed by the Queen's Medical Faculty. The Advisory Committee intends to keep the position under review.

I Historical Survey

6. The first attempt to look at the problems of medical manpower in recent times was made by the Goodenough Committee in 1944⁽¹⁾. They felt that at the time no useful estimate could be made of the number of doctors needed in future years, but suggested that the establishment of a National Health Service would almost certainly require an increase. The Government Actuary prepared a memorandum for the Committee showing the likely stock of doctors in future years for various possible medical school intakes. Although the Committee did not make any definite recommendation about numbers, they pointed out that an entry of 2,500 or so would allow a growth to 50,000 doctors in civilian practice by 1953.

7. The Government accepted one of the main recommendations of the Report – that there should be greater financial support for medical education – but no central decision was taken on the desirable number of students⁽²⁾. It was left to individual medical schools to decide on the number of students they would admit, and in fact statistics on the total number of admissions were not collected centrally until 1961. In the event, the intake of British students in the late 1940s was about 2,000 per annum.

8. During the early 1950s, competition for consultant posts in general medicine and general surgery became intense, and advertisements for general practice vacancies in certain parts of the country attracted large numbers of applicants. In 1954, the British Medical Association wrote to the Minister of Health expressing anxiety that too many doctors were being produced and asking for an exhaustive study of the question. As a result, an Inter-Departmental Committee was set up under Sir Henry Willink. When they reported in 1957 their chief conclusion was that there had not been too many doctors produced in the past, but that there was a danger of over-production in the future. They therefore recommended that the intake should be reduced by 10% to 1,760 places for British students each year⁽³⁾. The Government commended the Report to the universities, but again it was left to the individual medical schools to decide on numbers⁽⁴⁾.

9. It is now generally agreed that the Willink recommendations were wrong, and it is interesting to consider why. There were three main reasons:

a. The population (and hence that element of the demand for medical services relating to population) grew much more rapidly during the early 1960s than had been predicted in 1957.

b. The Committee was seriously wrong on doctor migration. They underestimated the number of doctors who had emigrated in the recent past, and hence predicted substantially less emigration in the future than actually occurred. As it happened, their estimate of immigration was even more in error, so that by 1965 there were substantially more doctors in Britain (though less British-born doctors) than the Committee had predicted.

c. The Committee observed that the very rapid expansion in the number of hospital doctors brought about by the foundation of the National Health Service had slowed significantly in the years 1953 to 1955, and assumed that the lower rate of these three years would persist. This agreed with an assessment of future need in the various specialties made by the British Medical Association. This slow down was a temporary phenomenon, however, and the Hospital Service once again grew very rapidly from 1959 on.

10. By 1960, doubts began to be expressed about the Willink conclusions, and an influential article by Squire and Lafitte queried a number of the Committee's assumptions(5). In 1961, therefore, the Health Departments undertook an internal review of the conclusions reached by the Committee and of the data on which they were based, and at the end of that year the Government announced that through the University Grants Committee they were recommending all medical schools to increase their intake as far as was possible without additional capital expenditure(6). As a result, intake of British students increased from 1,790 in 1960/61 to 2,150 in 1963/64. It was felt that further expansion to 2,400 was desirable, and in 1963 the Government announced the decision to build at least one new medical school(7). This was subsequently sited at Nottingham, and admitted its first students in 1970.

11. In 1965, the Royal Commission on Medical Education under Lord Todd (hereafter referred to as the "Todd Commission") was set up(8). In 1966, they addressed an urgent memorandum to the Secretary of State for Education and Science stating that they were convinced that a substantial increase in the output of doctors was required without delay. The Government accepted this conclusion, and in 1967 announced the establishment of a new school at Southampton, as well as the expansion of existing schools(9).

12. The predictions of future need made by the Commission were largely based on the extrapolation of past trends. In particular, they noted that the ratio of doctors to population (which they called "doctor-population-quotient" or DPQ) had shown a steady rise of 1·25% per year since the early part of the century. This may be seen from Figure 1, which shows that pure exponential growth gives a remarkably close fit to the DPQ since

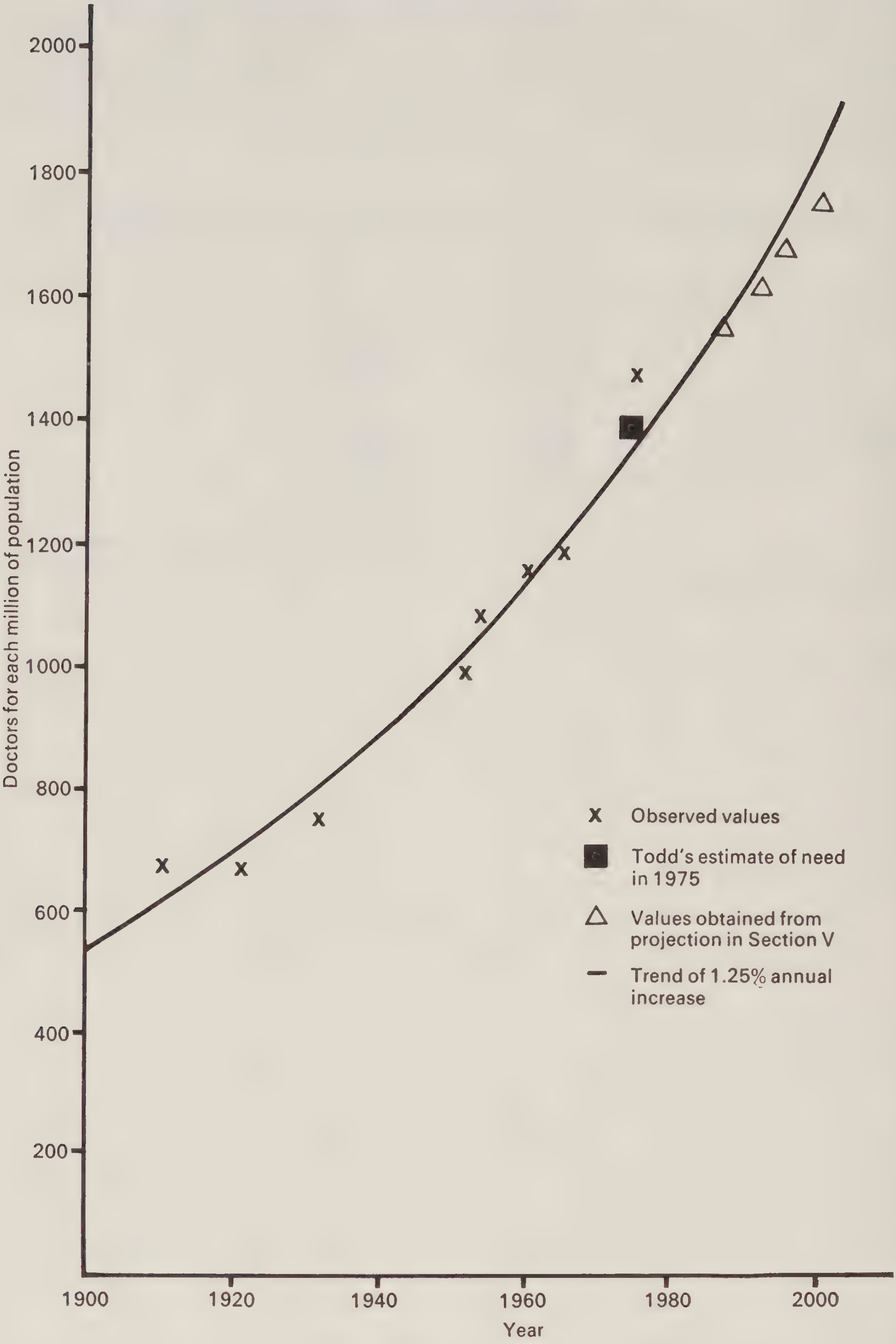
1911. The Commission noted that the curve passed very close to their estimate of the number of doctors required in 1975, although they recognised that it would be impossible to provide the necessary number of British graduates to meet this estimate of need. In fact, the actual number of doctors in 1975 (80,300) was greater than the Todd estimate, though half of this growth has occurred only by immigration.

Table 1 Suggested need for doctors based on exponential growth of doctor–population quotient

Year	DPQ (Doctors per million)	Number of doctors required	
		Using 1968 population estimates	Using 1976 population estimates
1975	1,385	78,100	75,500
1980	1,484	86,700	80,500
1985	1,590	96,400	86,300
1990	1,691	107,000	93,000
1995	1,801	119,800	100,200

Source: Report of the Royal Commission on Medical Education, Table 2(8); Population Projections, series PP2 No. 8(10).

Figure 1 The Doctor–Population Quotient in Britain



13. The Commission estimated the desirable DPQ in future years by extrapolating this curve forward, with minor adjustments to take account of the changing age structure of the population. Their projections of the DPQ together with the estimates of the number of doctors these imply are shown in the second and third columns of Table 1. The latter were based on the best estimates of population growth available in 1968; the corresponding figures based on current population projections are shown in the fourth column of the Table.

14. On the basis of their projections, the Commission saw a need for a substantial increase in the number of medical school places for British students to 3,500 by 1970, 4,300 by 1975, 4,700 by 1980 and 5,000 by 1985. In addition, they suggested that 200 places should continue to be available for overseas students. They accepted, however, that a total of 3,700 places was the highest practicable figure that could be reached by 1975. The Government accepted the need for an immediate expansion, and in April 1969 agreed to a target of 3,700 places by 1975(11). A decision on the longer-term recommendations of the Commission was deferred.

15. In 1970, the Government announced the establishment of a third new medical school at Leicester, and accepted a target of a maximum of 4,100 places by the late 1970s(12). After discussions with individual universities, a figure of 4,080 was eventually agreed and meeting this target has been accepted as a priority on a number of occasions since then(13). Delays in completing capital projects have made it impossible to reach the target as early as was hoped, and it is now accepted that it cannot be reached until the mid-1980s.

16. The matter has been kept under continual review since 1970 within the Health Departments, but no decision has yet been taken on the desirable intake once the target is reached. In particular, the Government has given no commitment to continue with the expansion programme recommended by the Todd Commission.

II Problems of Forecasting

17. There is an extensive theoretical literature on manpower forecasting(14); in practice, however, there are few examples of successful long-range forecasts of demand for trained manpower. Basically, two approaches to forecasting demand for doctors have been adopted – expert assessment of a theoretical need for medical care, and extrapolation of past trends. Both have drawbacks. The former has tended to produce unrealistically high estimates, while the latter obviously makes no provision for changes in policy.

18. In the past, forecasts of total numbers have proved more accurate than detailed forecasts of the number involved in different types of work. On the other hand, one can ask whether it is sensible to look at the total number of doctors in the country without asking what each is doing. The individual elements making up the total differ markedly. The work of doctors in training is different from that of fully trained doctors, while the work of two half-time doctors cannot simply be equated to that of one full timer. It is even arguable whether the service provided by doctors in different branches of the profession can be compared in any quantitative way.

19. Similarly, one might question whether the ratio of doctors to population used by the Todd Commission is a relevant parameter. Comparisons between different countries show no clear relation between the number of doctors per head and any of the conventional indicators of the state of health of the population, such as infant mortality or life expectancy at birth, while it has been argued that improvements in health over time reflect improvements in housing and sanitation as much as those in medical care. In fact, all such comparisons are extremely difficult because of the problems of disentangling geographical, environmental and ethnic or racial factors from the effects of the level of health service provided. At the very least, one might argue that simple population should be replaced by some weighted measure taking account of the different needs for medical care of different sections of the population, while doctor numbers should similarly be replaced by measures of the services provided. Despite substantial work in recent years, however, there are still no generally applicable numerical measures either of need or of the specific contribution made to health care by doctors.

20. Whatever the virtues of the doctor population quotient as a measure of provision of health care, it is a common observation all over the world that this quotient has shown a steady increase over time. Even if this does

not tell us much about need, it does tell us something about how societies have chosen to spend their money. Of course, the fact that there has been a steady increase for many years does not mean that the increase will continue indefinitely in the future and it would be unwise to accept figures such as those in Table 1 uncritically. It is, however, easier to recognise these difficulties in forecasting than to remedy them.

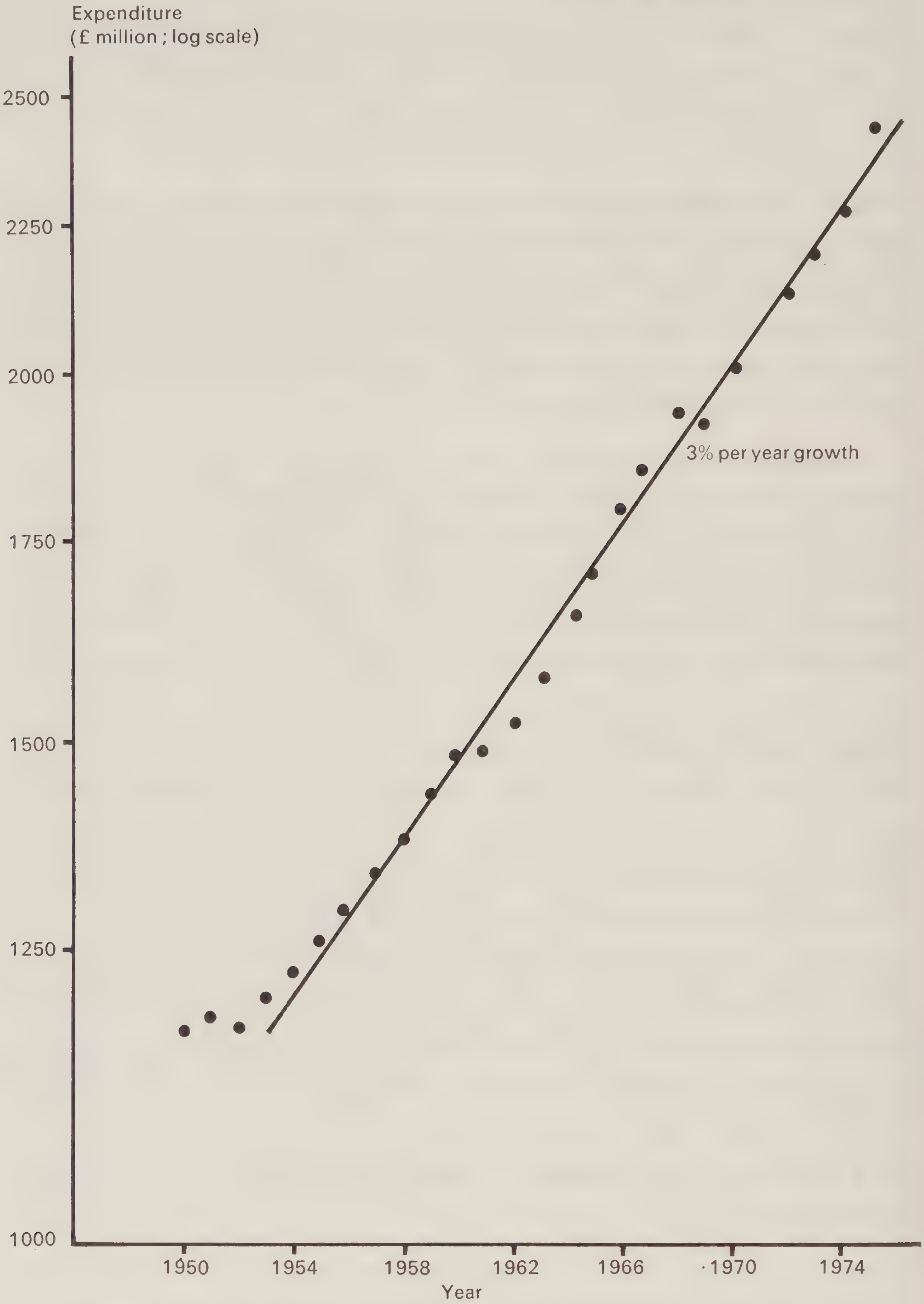
21. The NHS Planning System will provide an additional means for assessing demand and for monitoring the effects of carrying out national priorities – a switch to care in the community, better services for the elderly and the mentally ill – and will eventually provide valuable background to discussions of manpower needs. The planning cycle is only just getting under way, however, and it will probably be some years before it gives insight into long-term needs.

22. In fact, it is almost certainly naive to look for a simple answer to the question "how many doctors do we need?" The answer must depend on what role the doctor will be expected to play in future and on the priorities to be given to meeting different demands. It should take account of how disease patterns are likely to change, what relevant developments there will be in other services (such as personal social services) and, of course, the availability of resources both for the NHS and in the economy overall.

23. There is clearly scope for further study and research into the problems of long-range forecasting. For the present, we adopt a more modest approach and estimate the number of doctors which would be required to achieve various possible targets within the working assumption that the method of providing medical care will not change radically over the period considered. This is not to suggest that all of the objectives discussed in Section V can or should be met, or that additional doctors are needed to meet them. Some could be met by re-deployment of posts from elsewhere in the Health Service; others cannot be met at all. The figures in Section V should be regarded as estimates of the implications of certain specific proposals rather than estimates of need; their purpose being to help compare the medical manpower costs of different policies in setting priorities.

24. First, however, we consider the limitations imposed by the availability of resources.

Figure 2 NHS Expenditure in Volume Terms at 1970 prices



Figures refer to UK and to calendar years. Prior to 1969 figures include expenditure on certain local authority services ; from 1974 on they include the cost of community health services.

III Availability of Resources

25. Making long-term economic forecasts is perhaps even more hazardous than making long-term forecasts about doctor numbers. It is clear that any predictions made here must be interpreted with caution and regarded only as working assumptions. However, some estimate is clearly necessary as a background to a discussion of numbers.

26. The Todd Commission on Medical Education made four assumptions about economic growth, which we will now consider in turn.

A. GROWTH OF GNP

27. The Commission estimated that over the long term the Gross National Product would grow at an average rate of 3% per year in real terms. This is rather higher than the observed long term trend and a figure of 2·5% per year might be more prudent as a basis for forecasting.

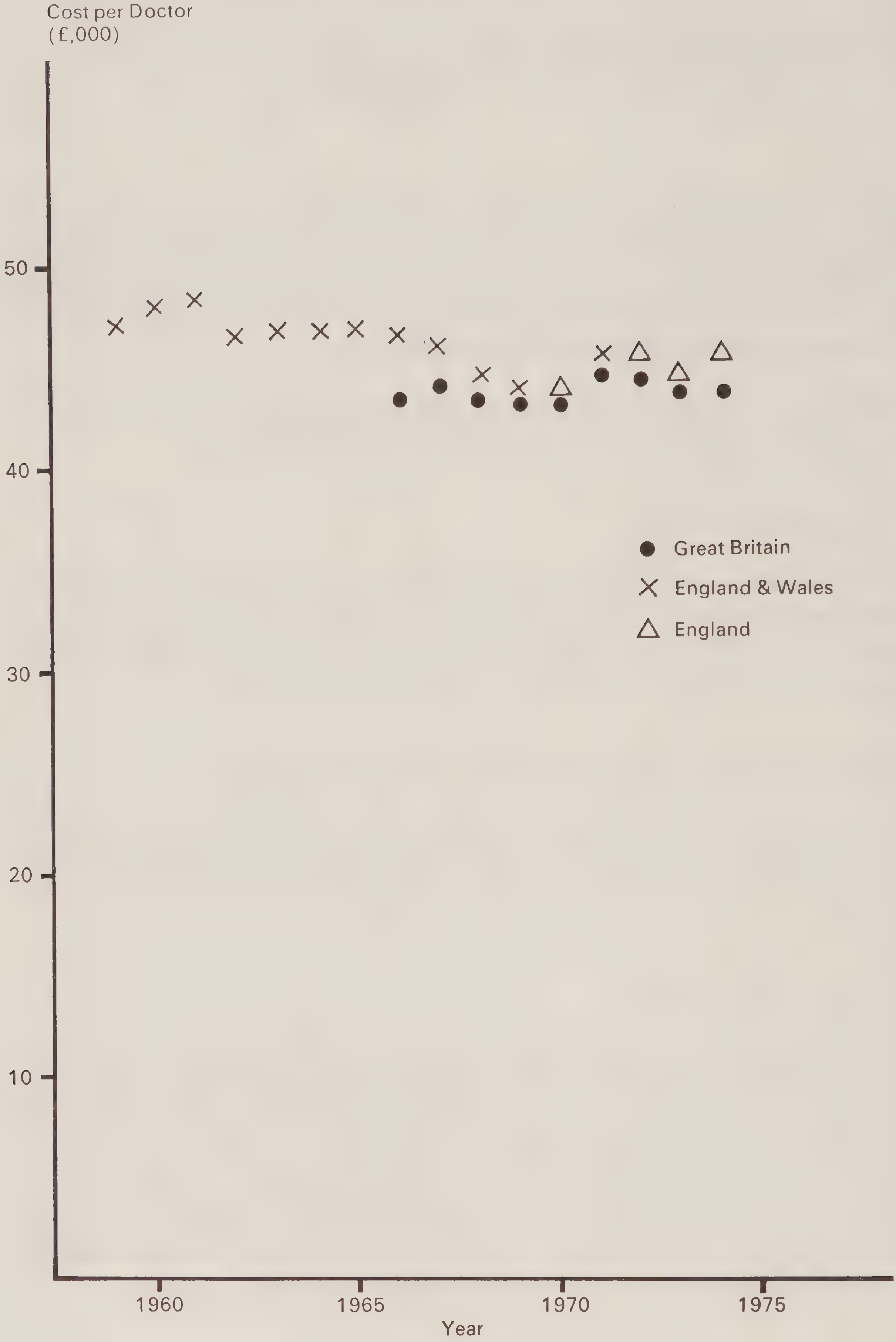
B. PROPORTION DEVOTED TO HEALTH CARE

28. The Commission further assumed that the proportion of GNP devoted to health care would not change. It seems reasonable to assume that it will not fall, and in fact this proportion has risen over the last 30 years.

C. REAL GROWTH

29. The Commission noted that a very high proportion of the cost of the NHS is salaries and wages, which tend to go up faster than other costs (the "relative price effect"). They therefore assumed that the real growth in resources for health care would be only 1·5% per year. In fact, over the past few years the actual growth in real resources available for the NHS in volume terms (that is, after allowing for this relative price effect) has been closer to 3% than to 1·5% per year (Figure 2). This suggests that the Commission's estimate may not be unduly optimistic.

Figure 3 **Cost of the Hospital Service per Doctor**



Plotted points are the ratio of revenue devoted to the hospital service (at 1970 prices) to the total medical staffing of the hospital service in whole time equivalent terms for the financial year ending in the year stated. As availability of comparable figures varies from year to year, figures are shown for three geographic areas.

D. PROPORTION OF HEALTH CARE EXPENDITURE DEVOTED TO DOCTORS

30. Finally, the Commission suggested that the proportion of expenditure on health care devoted to employing doctors would remain constant, so that a growth of 1·5% per year in doctor numbers could be afforded. Whether this assumption is reasonable for the next 20 years must depend partly on how doctors' salaries will change relative to other costs, and partly on the other costs falling on the NHS from employing more doctors. There are obviously large variations from specialty to specialty in the cost of employing an additional doctor. It is interesting to observe, however, that over the last 15 years the number of doctors in the hospital service has grown at almost exactly the same rate as the real cost of the service: the cost per doctor has remained more or less constant (Figure 3).

31. It is less straightforward to examine the cost per doctor in general practice as not only would this include the cost of medicines prescribed by general practitioners, but also certain of the costs of the hospital service might be regarded as arising from the activities of GPs, as it is usually a GP who decides whether a patient should be referred to hospital in the first place.

E. CONCLUSION

32. The Commission's estimate that it will be possible to afford an increase in doctor numbers of at least 1·5% a year still seems a reasonable working assumption. On the more pessimistic view that long-term growth will only be 2·5% per year (paragraph 27) the increase in doctors we could afford would be 1% a year. On the other hand, experience in this country and elsewhere shows that as the GNP grows so does the proportion of it devoted to health care. If long-term growth in the GNP is 3% per year and the proportion devoted to health care increases by 1% over the next 20 years, doctor numbers could increase by 2% per year.

33. The conclusion then is that for planning purposes it should be safe to assume that we can afford an increase of 1% to 2% per year in the number of doctors*, although this calculation will need to be considered further in the light of the debate about the basic assumptions underlying present medical manpower policy.

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*These figures include the cost involved in training doctors only insofar as it is borne by the NHS. There are also costs to the universities which would have to be considered in any comprehensive analysis of proposals to change the medical school intake.

IV Demand

34. In discussing estimates of the number of doctors needed in future, the Todd Commission stressed the high degree of uncertainty and concluded "The further ahead one attempts to look, the more arbitrary and unrealistic is any attempt to estimate the number of doctors needed in any particular branch of the Service"(15). The difficulties are pointed up even more starkly by comparing the estimates made by the Willink Committee with subsequent developments. In estimating the manpower needed in the year 2000 we are looking at a period not much shorter than that for which the NHS has been in existence and during which the nature of medical practice is likely to change substantially. It is inevitable, therefore, that the various estimates we shall give will be subject to a large margin of uncertainty.

35. These estimates will be based on assumptions about the delivery of medical care which may themselves be questioned. In broad terms, we will assume that the pattern of care will not change radically and that the role of the doctor will continue to be much as it is at present. As explained in the introduction, this is very much a working assumption – without it it would be difficult to make any firm estimates – and it will have to be examined critically before any long-term decisions are made.

36. It is convenient to distinguish four specific factors that might affect the number of doctors required:

a. Demographic changes.

b. Reduction of existing geographical disparities.

c. Changes in the organisation of medical practice.

d. Improvement in the services provided.

These are discussed below largely in relation to the hospital and general medical services. Other employment of doctors is considered briefly in paragraph 61. In the absence of a better measure, we will use the doctor population quotient as a rough measure of the level of health care, despite the reservations expressed above (paragraph 19).

A. DEMOGRAPHIC FACTORS

37. If the existing ratio of doctors to population is to be maintained clearly more doctors will be needed if population increases. This factor has been one of the chief sources of error in earlier predictions (as already mentioned, one of the main reasons for the inadequate projections made by the

Willink Committee was the very rapid growth of population after they reported. On the other hand, population growth since the Todd Commission reported has been significantly less than they assumed.)

38. On the 1976-based principal projection of population produced by the Office of Population Censuses and Surveys(10) an extra 2,120 active doctors (or 2·6% more) will be needed in the year 2001 to maintain the doctor population quotient of 1975. OPCS now provides a range of projections based on varying assumptions about fertility:

a. The "higher births variant", which assumes an early change in the trend of fertility so that births will be rising by 1979 – an extra 3,130 doctors would be required to maintain the ratio of doctors to population in 2001 on this projection.

b. The "lower births variant" which assumes that the present downward trend in fertility will continue until 1980 and that there will not be a rise until 1983 – on this projection an extra 560 doctors would be needed to maintain the ratio.

c. The "continuing high variant" assuming a long-term fertility of 2·3 children per woman (compared to 2·11 on the higher birth variant), which leads to a demand for 5,060 extra doctors.

d. The "continuing low variant" assuming a long-term fertility of 1·8 children per woman (compared to 2·11 on the lower birth variant), which leads to a population in 2001 that would actually be less than in 1975 so that 1,690 fewer doctors would be needed to maintain the ratio.

Even if we restrict attention to the first two of these variants, it still leaves an uncomfortably wide margin of uncertainty, reflecting the notorious difficulties in projecting future populations accurately. These variants differ only in the assumptions made about the birth rate, and hence in the projected number of younger people in future years. The greatest demand for medical care comes from the elderly, however, and all those who will be 60 or over in 2001 have already been born, so that all the projections agree on the numbers in this age group. This suggests that these uncertainties will be less important if we look at a weighted population, with the weights reflecting the differing needs for medical care at different ages.

Table 2 Relative requirements for medical care at different ages

Age group	In-patient utilisation rates	Day and out-patient utilisation rates	GP consultation rates
Males			
0– 4	921	157	164
5–14	379	146	87
15–19	378	233	95
20–24	387		
25–34	353		
35–44	533		
45–64	1,188	301	141
65–74	2,978	352	157
75+	7,311	296	222
Females			
0– 4	784	148	149
5–14	283	107	80
15–19	759	198	169
20–24	1,512		
25–34	1,323		
35–44	859		
45–64	1,061	296	135
65–74	2,649	305	175
75+	9,102	330	211

Notes:

1. In-patient utilisation rates in terms of non-psychiatric bed-days per 1,000 population.
2. Out-patient utilisation rates in terms of out-patient attendances in a three month reference period (excluding ante and post natal attendances) per 1,000 population.
3. GP consultation rates in terms of consultations with a GP (NHS only) in a two week reference period per 1,000 population.

Source: HIPE(16)
GHS(17)

39. There are various possible ways to take account of changes in the age structure of the population, none of which is wholly satisfactory. One difficulty is that although figures are available showing the extent to which different age groups use different medical services at present, it is by no means clear that these can be extrapolated 20 years into the future. It could be argued, for example, that the generation that has grown up since the foundation of the NHS has higher expectations of medical care and will make correspondingly greater demands in future than the group that grew up before or during the war. (Though in the short-term, the recent trend has been towards decreasing GP consultation rates). Another problem is that present figures reflect the availability of certain types of care as well as the demand. If geriatric services were more generally available than paediatric, one might expect higher utilisation rates by the elderly than by the young and vice versa. The weighted figures given below should therefore be regarded as illustrative rather than definite.

40. We have used three possible methods of weighting:

a. Weights based on hospital in-patient utilisation rates for 1974(16).

b. Weights based on usage of day and out-patient services from the General Household Surveys for 1973 to 1976(17).

c. Weights based on GP consultation rates from the same General Household Surveys.

The actual weights used are summarised in Table 2. The Todd Commission suggested a set of weights based on Swedish data of the 1950s, which seem less likely to be relevant than those quoted above, and we have not used them here.

41. Table 3 gives the result of applying these various weights to the principal projection for population and to the variants mentioned above. It should be stressed again that these figures indicate the demand for various services in 2001 if the present pattern of care is maintained, and that the hospital figures relate to overall demand rather than to the demand specifically for doctors. Subject to these caveats, they show a demand for non-psychiatric in-patient hospital services some 9% higher in 2001 than in 1975, and a demand for out-patient services and general medical services some 3% higher on the principal projection.

Table 3 Weighted populations in 2001 compared to 1975

For each column the weighted 1975 population=100

Projection	Unweighted population	Population weighted by		
		Hospital in-patient usage	Out-patient usage	GP consultation rates
Principal	102·6	109·1	103·2	103·5
Higher births variant	103·9	110·5	105·6	106·1
Lower births variant	100·7	107·5	100·5	100·1
Continuing high variant	106·3	110·7	105·8	106·7
Continuing low variant	97·9	107·3	100·0	99·6

Source: Populations from OPCS(10)
Weights from table 2

42. As suggested above, the growth in demand for in-patient services at least is less sensitive to different assumptions about the birth rate than is the total population. It is not simple to extract a single figure for overall increase in demand for doctors' services from Table 3 (largely because detailed information on the proportion of medical time in hospital devoted to in-patients and out-patients is not readily available), but the table does suggest that at least 2,100 doctors, as quoted in paragraph 38, are likely to be necessary to keep up with increased demographic demand unless the birth rate continues to be extremely low.

43. There are other, more complicated effects of the changing age distribution of the population which should be studied – for example, changes in the number of people of working age could affect the rate of growth of the GNP, while a decreasing proportion of those in the younger age groups might make it possible to transfer resources from the services mainly used by the young to the Health Service(18). There are also other demographic factors which could affect the demand for health care.

For example, there are differences in the usage of medical services between married and single people and between people who live alone and those who do not, so that changes in the average age on marriage, in the proportion of single people, or in the proportion of people who live alone could all have an effect(19). These factors are all likely to be less important than those already discussed, but they will need to be studied in more detail.

B. REDUCTION OF REGIONAL DISPARITIES

44. Doctors are not distributed evenly across the country and there are wide regional variations in the ratio of doctors to population. A high priority might be given to reducing these variations whether by redeployment of posts as they fall vacant or by encouraging differential growth, in parallel with the redistribution of resources.

45. Again, one might query whether the doctor population ratio is a relevant parameter. There is no simple relationship between the staffing levels in the various regions and the level of service they provide, and it is possible to deliver health care in different ways with different mixtures of junior and senior doctors or of medical and non-medical staff. The extent to which the present average level of staffing should be regarded as any sort of a norm is again a question needing further study, but as most of the regions with below average staffing levels have set the goal of raising staffing to a level comparable with others as part of their Regional strategic plans we should at least see what this would involve.

46. To bring all the English Regions and Wales up to the 1977 England and Wales average number of doctors per head would require 2,070 whole time equivalent doctors, while to bring them up to the average level of staffing in the 4 Thames Regions (excluding the postgraduate teaching hospitals) would require 5,520 additional whole time equivalents. There are a number of highly specialised services provided on a national basis in London, however, and the Thames Regions, with just over a quarter of the population of England and Wales but with more than 40% of the medical students, need to devote more staff time to medical education than other regions, so that this latter figure is almost certainly an unreasonable target. Because of differences in the pattern of provision in Scotland, exact comparisons cannot be drawn but to reduce geographical variations there would also require a significant increase in the number of hospital doctors.

47. In general practice, to reduce the average list size in all "designated areas" (broadly, those with average list sizes over 2,500) in England and Wales to 2,500 would require 275 additional doctors. The average list in designated areas in Scotland is already below 2,500. Not all large lists are in designated areas and a maximum list size of 2,500 was suggested both by the Todd Commission and the Harvard Davies Sub-Committee(20). Approximately 1,400 additional doctors in England and Wales and 180

in Scotland would be needed to reduce all lists to a maximum of this size without increasing existing lists. This figure may be misleading, however, as many of the GPs with large lists employ assistants, so that their individual work load may be less than the list size suggests. Moreover, several studies have shown that a high list is not necessarily an indication of inadequate care or of over-burdened doctors so that this latter figure may be a generous estimate.

C. CHANGES IN MEDICAL PRACTICE

48. As already mentioned, the number of doctors needed could be affected by changes in the organisation of health care delivery. These include a shift in emphasis from hospital to community care, the possibility of having relatively more consultants than juniors, changes in the size of practices or of their organisation, an increasing trend towards general practtitioners working in health centres, some re-distribution of work between medical and non-medical staff, the effects of technological change, or the possibility that doctors will choose to work shorter hours than at present. We now discuss various of these factors in turn.

Changes in proportions in various grades

49. At present, 60% of the doctors in the Hospital Service are in the training grades. This proportion is likely to change as we become more self-reliant in medical manpower (see paragraph 93 below) and this could have implications for the total numbers needed. Doctors in the training grades devote part of their time to study, and because turn-over of staff is higher than in career grades, posts may be vacant a larger proportion of the time. While the contribution a doctor makes is less when he has less experience, older doctors may be less able to provide on-call and emergency services. For these reasons the service contributions made by doctors in different grades may not be directly comparable. The information is not available to quantify this, however, and the effect may well be less than that of the individual differences between two doctors in the same grade. We have therefore made no attempt to calculate the effect on the overall number of doctors needed of changes in the proportions in the different grades.

Increased use of non-medical staff

50. Over the past several years, there has been a substantial increase in the numbers of non-medical staff providing health care or assisting doctors – nurses, radiographers, medical secretaries – and the suggestion has often been made that fewer doctors would be needed if more work currently done by them was carried out by other staff groups. The question of where the line is to be drawn between work done by the medically qualified and other professional groups is a complex matter, however, not least because the boundaries are constantly shifting. There seems to have been little work in this country of the extent to which substitution

between different staff groups would be advantageous although studies have been made in other countries. The relevant question from the point of view of the Health Service is the relative costs and benefits of different mixes of staff, and this is an area where further research is extremely important.

The effects of technological change

51. Another area in which little work seems to have been done in this country is the extent to which doctors' "productivity" can be increased by advances in medical technology. Such advances can enable doctors to carry out existing procedures more efficiently, or even make some procedures unnecessary (for example, the development of effective drugs for the treatment of tuberculosis has reduced the variety and amount of work in caring for patients with this condition and hence the demand for specialists in TB). It is far more common, however, for the development of new techniques to make more procedures possible, with a consequent demand for more doctors to carry them out(21). Thus, for example, the introduction of lasers in ophthalmology has enabled doctors to carry out some surgical procedures more quickly, but has also made surgical intervention possible in cases which previously would have had no treatment, and has thus increased the demand for medical time. Again, advances in technology often lead to existing procedures becoming more complicated and more lengthy hence requiring more medical staff(22). Some techniques in preventive medicine, such as genetic counselling or early detection of foetal abnormality cannot develop at the rate which would be desirable because of the shortage of skilled staff.

52. Unfortunately, this factor, which is one of the most important in assessing future needs, is also one of the most difficult to predict, especially over a long time span, and no allowance has been made for it in the calculations. By their nature, new developments are unforeseeable and their effect cannot easily be guessed by extrapolating from past experience. It seems likely that this effect accounts for much of the rise in the doctor population quotient observed by the Todd Commission (paragraph 12 above).

Hours worked by doctors

53. In the hospital service, the Secretary of State has recognised as a target that junior doctors should not be contracted for more than 80 hours per week including on-call time. To achieve this, while maintaining the present (1977) level of commitment, would require an additional 2,900 whole time equivalents, but there might be scope for reducing the total on-call commitment by a different organisation of services. Similarly, if no consultant worked more than 40 hours a week in the NHS it would require an additional 1,800 whole-time equivalents to maintain services at present levels.

54. In general practice, the simplest measure of workload is average list size but this is a very imperfect measure and takes no account of other factors of equal importance. Variations in morbidity, patients' expectations, supporting services and practice organisation combine to exercise a greater influence than list size itself, and it is not clear what advantages would accrue from any particular target list size. To indicate what might be involved in reducing list sizes, Table 4 shows the number of additional general practitioners that would be required to achieve various ratios of population to GPs.

Table 4: Number of additional doctors required to achieve various ratios of population to the number of general medical practitioners

People per GMP	Additional doctors required
2,100	1,600
2,000	2,800
1,900	4,000
1,800	5,500

The calculations are based on the assumption that the present average list size in Scotland will not increase, and refer to unrestricted principals only.

55. The introduction of the hospital practitioner grade may encourage general practitioners to take on hospital sessions. Such involvement would not only help to meet service requirements but would increase links between primary and secondary care services which might help towards a greater rationalisation of the provision of medical care. This might reduce the overall need for hospital doctors, but any saving could be off-set by the need to recruit more general practitioners if the doctors who take on hospital sessions reduced their list sizes. If list sizes were rather lower than at present, however, general practitioners would be able to undertake more in the way of hospital work (or other medical work) than at present, and some would undoubtedly wish to do so, producing corresponding savings in manpower elsewhere.

D. IMPROVEMENTS IN SERVICES PROVIDED

56. There are certain areas in which there is a clear unmet demand at present, and where there are not enough doctors available to provide a service which Health Authorities wish to provide. In the hospital service, for example, there are two main groups of specialty where there are not enough consultants to meet the present demand:

a. "Client Group" specialities – for example psychiatry and geriatrics – where the Government's policy should lead to a continued high rate of growth.

b. "Support" specialties – anaesthetics, radiology, pathology – where a higher standard of medicine and new techniques have increased demand.

57. Any estimate of demand in a particular specialty must be based on assumptions about how services are to be provided and all the factors

already mentioned – greater use of non-medical staff, changes in the proportions in different grades, developments in techniques – could affect the figures. Once again, therefore, we shall make the working assumption that the present pattern of care will not change radically and the estimates below must be considered in this light.

58. Estimates have been made of the number of consultants in various specialties needed to meet the needs of an average district of 200,000 people when adequate supporting staff and facilities are available. The number of doctors needed will depend on the quality of service to be provided and there is obviously a degree of subjective judgment in deciding the desirable level of care. An assessment based on what is considered good care by present standards involves a degree of arbitrariness, but the figures can be useful as a guide to the future. In particular, one might note the following:

a. The White Paper on services for the mentally ill(23) suggests a target of 5 consultants in adult psychiatry and 1 in child psychiatry per 200,000 population, or 250 and 40 respectively more than at present.

b. The British Geriatric Society proposed a target of 3 consultants per 200,000 population with the average proportion of elderly people, or 375 more than at present. The Departments would not dissent from this figure as a target.

c. Another specialty in which rapid growth might be expected is paediatrics. The Secretaries of State for Social Services and for Wales have accepted the long-term target suggested by the Court Committee(24) of 3 consultants for an average district, or 200 more than at present.

These figures relate only to consultants, but in some specialties there would be consequential growth in the number of doctors in the training grades.

59. In the case of the support specialties, there are so many unknowns that even an approximate estimate is difficult. In the past, the available supply rather than the unmet demand has determined the rate of growth. It is possible to identify particular factors that might affect demand, however, and to quantify them to some extent:

a. In anaesthetics, there has been a rapid growth of demand in recent years due largely to developments in techniques. Another factor of importance has been a substantial growth in work outside the operating theatre – pain clinics, intensive care units, pre- and post-operative work with patients, and the provision of epidural analgesia during child birth. These trends seem likely to continue, and as a very rough estimate one might expect an increase in the number of consultants of perhaps a third by the year 2000; that is, 500 to 600 more consultants.

b. Demand for radiologists depends to some extent on the number of doctors in other specialties. It is possible to make estimates of demand based on the workload (either in terms of number of examinations or of the time spent on particular items of work), on availability of facilities, or on staffing figures in countries with similar health care systems. These estimates all agree well and indicate a demand for perhaps 250 additional consultants at present. There is no indication yet of a slackening in the growth of demand, and the development of new techniques such as ultra-sound and computerised tomography could increase the workload, so that this figure is almost certainly an under-estimate of the long-term growth in demand.

c. Demand for pathology services has been increasing at an average rate of nearly 6% per year over the past few years. The increasing development and use of diagnostic techniques and diagnostic re-agents, the development of screening techniques, the implementation of the Health and Safety at Work Act and the consequent development of industrial medicine, and the move towards closer clinical relationships between pathologists and patients are all factors contributing to this increase in workload. On the other side of the scale, a degree of rationalisation and centralisation of laboratory services should lead to more efficient use of manpower. The growth of automation in laboratories is likely to reduce demand on technicians' time but not to make a significant difference to medical manpower. A factor which might be important in reducing demand is the increasing effort to "educate" clinicians towards making the best use of the pathology service by limiting their demand for routine "batteries" of tests and by being more selective in requests (a similar comment applies to radiology). On balance, it seems likely that the demand for pathologists will continue to grow but it is difficult to give any overall figure for long-term demand.

60. Improvement of services occurs not only by meeting deficiencies which can be recognised at present, but by advances in medical care which make it possible to offer new services in future. Much of the discussion in paragraph 51 above is relevant here, and again it is difficult to quantify this effect.

E. DEMANDS FOR DOCTORS OUTSIDE GENERAL PRACTICE AND THE HOSPITAL SERVICE

61. The discussion above has focussed on the demand in general practice and the Hospital Service. It is possible to identify other demands, including:

a. *Community Medicine*. The present establishment in community medicine is 770 posts, of which about 130 are vacant. Taking account of likely changes in establishment the number of vacancies might increase to 150 or 200 over the next 10 years at the present rate of recruitment.

b. *Academic Medical Staff*. As the number of students increases, the number of doctors employed in universities could increase. To a certain extent, universities have already taken on extra staff in anticipation of growth in numbers and the total growth in this sector is unlikely to be more than about 300 doctors.

c. *Industry.* Employment of specialists in occupational medicine is increasing following implementation of the Health and Safety at Work Act and this is likely to continue. It is still too early to quantify the demand from this source, however. The number of doctors employed in the pharmaceutical industry has increased by more than 50% over the past eight years, and could continue to increase if this industry develops substantially in future. The total number involved is only about 350 at present, however, so that this is unlikely to be a major source of demand.

d. At present, the number of doctors who practice entirely outside the NHS is small. It has been suggested that the private sector may grow substantially. If this did happen, to a certain extent the private sector would be offering a service that would otherwise be obtained from the NHS and this would reduce the demand on the NHS. Any increase in the number of doctors practising privately might thus be offset by a reduction in the need for doctors in the NHS. To the extent that the private sector supplied a service that would not otherwise be provided (for example, to people from abroad coming to this country specifically for medical treatment) more doctors would be required. There does not seem to be any firm basis for estimating an actual number, however.

At present there seems to be no reason to expect substantial increases in the number of doctors employed in the General Ophthalmic Services, the police, the Armed Forces, the Civil Service, the Public Health Laboratory Service, the Medical Research Council, or outside the public service.

F. SCOPE FOR REDUCTION IN DOCTOR NUMBERS

62. So far, our discussion has focused on demands for more doctors and we should also ask whether there are any areas where doctors are employed at present and where we could manage with fewer. This is not an easy question to answer on a national scale. It is almost certainly true that there is scope to use existing doctors more efficiently – by rationalisation of appointments with duties at a number of different hospitals, by concentration of certain specialised units at a smaller number of hospitals, by provision of more secretarial or clerical help and so on – but this is part of the general question of more efficient planning generally and the actual saving on manpower to be achieved is not easily estimated centrally. There are isolated examples of individual specialties where the overall workload has decreased substantially due to developments in medicine – diseases of the chest is the best example – but again it is not easy to estimate the extent to which this might happen in future. There are a number of general practitioners with list sizes substantially below average and in some cases it would be possible for a smaller number of doctors to look after the same number of patients, although many of the doctors

with small lists are elderly and unable to take a heavier workload, or have extensive commitments in the hospital service or community health services. As already mentioned, the possibility of reducing demand for doctors by greater use of other types of staff deserves further study. At a more fundamental level, greater emphasis on prevention and on the public accepting more responsibility for their own health could reduce the total demand for health services – here again it is not possible to quantify the effect on doctor numbers. These are clearly points of fundamental importance in planning, however, and deserve further study.

G. SUMMARY

63. It might be helpful at this stage to summarise the various estimates we have made:

a. To maintain the ratio of doctors to population and take account of the changing age structure would require perhaps 2,000 extra doctors (paragraphs 37–43).

b. To bring all English regions and Wales up to the 1977 average level of hospital staffing would require 2,070 extra; to bring them up to the 1977 average level of staffing in the 4 Thames Regions would require 5,520 extra (paragraph 46).

c. To eliminate designated areas would require 275 doctors; to eliminate lists over 2,500, approximately 1,400 doctors (paragraph 47).

d. To ensure that junior doctors were not contracted for more than 80 hours per week while maintaining the present commitment would require 2,900 whole time equivalents; to ensure that consultants were not contracted to the NHS for more than 40 hours per week would require 1,800 extra (paragraph 53).

e. Reducing the ratio of people per GP to 2,100 in England and Wales would require 1,600 additional doctors; to 2,000 would require 2,800 additional; to 1,900, some 4,000 additional. (These figures include that in (c) above) (Table 4).

f. To ensure desirable growth in various specialties would require 290 additional consultant psychiatrists, 375 additional consultants in geriatric medicine, 500 to 600 additional consultant anaesthetists, 250 additional consultant radiologists, 200 additional consultant paediatricians (paragraphs 58 and 59).

g. To provide for the estimated growth in community medicine would require 150 to 200 additional doctors (paragraph 61).

h. The growth in academic medical staff might be 300 (paragraph 61).

64. This list is by no means exhaustive as it excludes the various factors we were unable to quantify – changes in the proportion in various grades, the effects of technological change, improvements in services, the demand for specialists in occupational medicine or in the pharmaceutical industry, or the growth of the private sector. It also makes no allowance for possible

reductions in doctor numbers elsewhere. The various items listed overlap to some extent. For example, the growth in the various specialties in (f) might occur to a greater extent in the less well staffed regions and go some way to reducing regional disparities, or some of the extra doctors necessary to maintain the ratio of doctors to population might be GPs in designated areas.

65. It must also be emphasised that there is no suggestion that all the demands listed should or could be met in the period under discussion. Rather, the list is intended to give a series of possible choices for using an increased number of doctors as well as part of the background information necessary to assign priorities to these various choices. There are many uncertainties in the calculations, and one conclusion is clearly that the various estimates given should be refined over time and that efforts should be made to quantify some of the other factors discussed above. To put the figures in perspective, however, it might be worth comparing them with the total number of active doctors in Britain in 1975 (80,300) or with the estimate made in Section III of the number of additional doctors that we could afford. A growth rate of 1·5% per year would correspond to an extra 36,200 active doctors by the end of the century. A slower growth of 1% a year would correspond to 22,700 extra, while 2% per year growth would lead to 51,400 extra.

V Supply

66. The Department of Health and Social Security has developed a computer model to demonstrate the effect of specific assumptions (listed below) on the likely size of the stock of doctors. Full details are set out in Appendix C. Many of the assumptions involve a degree of judgment, and the Department will consider running the model with alternative assumptions if requested. In view of the many unknowns, it is not sensible to produce a single figure for the stock in future years, and Appendix C also discusses the effect of varying the assumptions and the possible margin of uncertainty in the projection. The chief variable is, of course, the medical school input in future years and what this should be is the main question raised in this paper. To focus the discussion, a "basic projection" was made on the assumption that once the target intake is reached it will be maintained until the end of the century. As already mentioned, no decision has yet been taken on what the intake should be after the early 1980s and this was adopted as a working assumption for the sake of definiteness and to provide a basis which can be used for studying the effect of varying the other assumptions. The results of alternative assumptions about intake are shown in Figure C5 of Appendix C. The basic projection is not intended to be a prediction of what will happen but merely to provide a background to compare with the figures in the last section.

67. The other important factors affecting supply are retirement, migration and the proportion of doctors able to work only part-time. These are considered below.

A. BRITISH BORN DOCTORS

Medical school intake

68. The target of 4,080 places should be reached by the mid-1980s. For the years before that the likely number of students entering medical schools is known from the planned intakes of the various universities. As explained above, for the purpose of the model intake was kept static at the target figure until the end of the century, while the effects of a reduction to 3,500 or of an increase to 4,500 were also explored. It was assumed that a constant proportion of places would continue to be occupied by students born abroad, while in the case of British students it was assumed that the percentage of women would increase from 35 in 1977 to 50 by 1985. The wastage rate over the undergraduate course was set at the average value observed in recent years and an allowance was made for students obtaining a British registrable qualification (the Conjoint Diploma, the Scottish

Triple Qualification or the Licentiate of the Society of Apothecaries) without attending a British medical school. The proportion of women and the wastage rate were varied to give alternative projections.

Retirement

69. The Todd Commission assumed that doctors would tend to retire earlier as time went on, and suggested how the proportion that might be active at various ages would decrease over the years. In fact, the proportion of doctors over the age of 65 still working is already rather lower than that suggested by the Commission, while present activity rates for those over 75 are already lower than the Commission's prediction for 1990. On the other hand activity rates in the age group 60 to 64 are higher than predicted, and have actually increased since 1970. This suggests a general move to 65 as the age of retirement. For the model, 2 projections were made – one assuming present activity rates over the age of 60 would remain unchanged until the year 2000, and one assuming no doctors would work beyond 65. These are likely to lie on either side of the actual behaviour, and for the basic projection it was assumed that activity rates would decrease slowly to reach the average of these 2 projections in 2000. Alternative assumptions were tried including a move towards retirement at 60.

Migration

70. Although there have been short-term variations in the outflow and inflow of British doctors, net emigration has been roughly 300 to 400 per year for a number of years. Prediction of future trends is particularly difficult at present because of uncertainties about the effect of implementation of the EEC directives on free movement, and of recent North American legislation making immigration more difficult. Outflow in recent years has been above average, but there are signs that the trend is levelling off, and for the model it was assumed that migration would return to the average rates of the past few years. The results are not tremendously sensitive to this assumption, and a difference of 100 a year in net migration until the end of the century corresponds to only one and a half year's growth in stock. In other words, a 25% change in net emigration over the whole period would mean that the projected stock for the year 2000 would actually be reached 18 months earlier or later.

Contribution of women doctors

71. Even more relevant than the overall number of doctors is the size of the effective work force, taking account of doctors working only part-time or not at all. The full advantages of the growth in medical schools will only be felt if all doctors are able to make the maximum contribution, and there are a number of schemes to encourage doctors with family commitments to work part-time and to return to full-time work when possible. It is obviously difficult to quantify how effective these will be and, in fact, there has been no detailed survey of the number

of hours actually worked by women doctors since the 1971 census, although the Department has recently commissioned further research on this subject. There are fairly recent figures for the number of women doctors who are active in medicine (though not of the hours worked) and these show a substantial increase in activity rates at all ages between the years 1970 and 1974. It seems reasonable to expect this trend to continue, so that using the actual 1974 activity rates might be expected to underestimate future activity. Correspondingly using activity rates equal to those for men might lead to an over-estimate so that these two together provide a range of possibilities within which the actual value should lie.

72. It can be argued that women's employment is determined more by demand than by any other factor and that a shortage of doctors would lead to much greater female participation(25). Activity rates for women doctors during the War were much higher than those during the 1960s for example although 1974 rates are slightly higher than those in 1944. This suggests that the predictions of activity rates based upon trends must be treated with some care. The contribution of women doctors is discussed further in paragraph 85 below.

Summary

73. For convenience, these assumptions are summarised below:

Medical school intake – 4,080 per annum from 1983
– 50% women from 1985

Net emigration – 0·6% of stock (equal to 380 per annum at the beginning of the period).

Retirement – less than 25% of doctors over 65 active at beginning of period, decreasing to 12% at end.

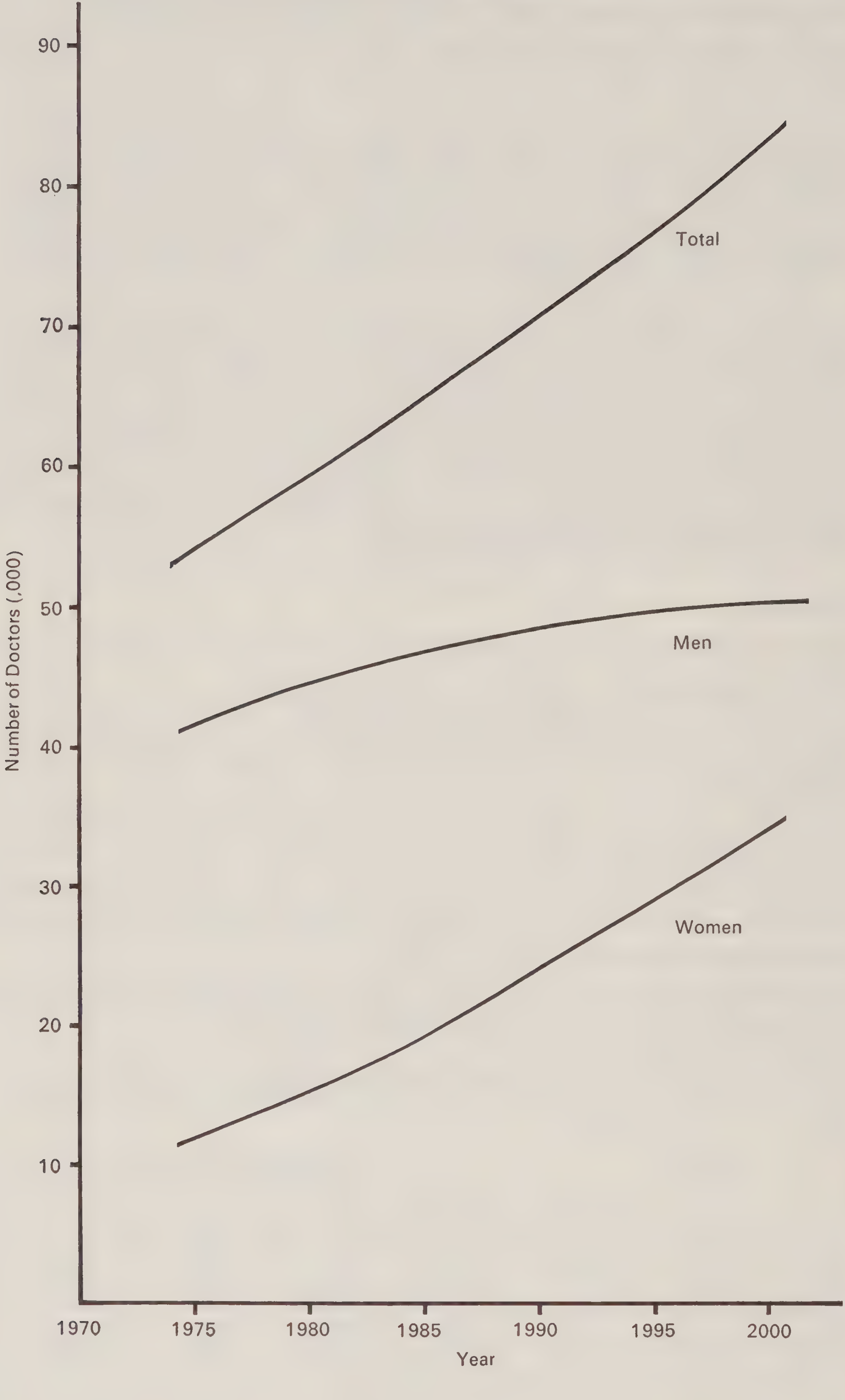
Part-time work – Women active for 36 years on average (equivalent to 27 years whole time work) at beginning of period increasing to 39 years on average (30 years whole time) at end.

The resulting projection of the stock and the whole time equivalent work force are given in Table 5 and are illustrated in figure 4.

Table 5 Projected stock of British born-doctors active in medicine

Year	Active stock (000)					
	Numbers			Whole-time equivalents		
	Male	Female	Total	Male	Female	Total
1975	42·2	11·8	54·0	41·0	9·1	50·1
1985	46·4	18·6	65·2	45·3	14·7	60·0
1990	47·7	23·6	71·2	46·4	18·6	65·0
1995	48·4	28·8	77·2	47·2	22·6	69·9
2000	49·7	33·9	83·6	48·5	26·5	75·0

Figure 4 Active British Doctors (Numbers)



B. IRISH DOCTORS

74. In the past, doctors born in Northern Ireland or Eire have formed an important component of the stock of doctors in Britain, although the relative number of such doctors is now decreasing. A projection on the same lines as that just discussed was made for Irish doctors in Britain, extrapolating past trends in the manner suggested above. The results are more likely to be subject to error because of the smaller numbers involved – they are given in Table 6.

C. OVERSEAS DOCTORS

75. There are several reasons why projections about the future numbers of doctors born overseas who will wish to come to Britain are subject to great uncertainty. The number of such doctors in Britain has increased sharply over the past 5 to 10 years, and only limited information is available about trends in death, emigration and activity rates. This is particularly true in relation to doctors eligible only for temporary registration, although further details about such doctors are currently being incorporated in the Department's statistical records. A number of changes have recently occurred which might affect the supply of doctors from overseas – the 1978 Medical Act, the introduction by the General Medical Council of a test for doctors seeking temporary registration, withdrawal of full recognition from Indian medical qualifications and new emigration restrictions in Pakistan. Immigration from Europe has been very small but this may change as a result of implementation of the EEC directives on free movement. Finally, little is known about the career intentions of those overseas doctors who are already in Britain. Here again, the Department has commissioned research but the results are not expected to be available before 1979.

Table 6 Projected stock of Irish-born doctors active in medicine

Numbers

Year	Active stock		
	Born in Northern Ireland	Born in Eire	Total
1975	950	2,300	3,250
1985	840	1,790	2,630
1990	780	1,570	2,340
1995	740	1,440	2,180
2000	740	1,420	2,150

Table 7 Projected stock of overseas-born doctors active in medicine

Numbers

Year	Active stock (000)	
	Nil immigration	Nil net immigration
1975	21·1	22·5
1985	10·8	23·0
1990	9·1	23·5
1995	7·2	23·7
2000	6·3	23·8

76. It is important to recognise that the level of medical immigration is determined to a large extent by factors other than the supply of suitably qualified doctors who wish to come here – in particular, by the opportunities for employment in this country and by the facilities available for postgraduate education. These, in turn, are determined by the availability of resources, the overall demand for doctors and by the extent to which this demand is or is not met by British graduates. It may therefore be more reasonable to regard future levels of immigration as the output from a projection rather than as one of the inputs. That is, once an estimate has been made of future demand in a given year it should be compared with the projected stock of British graduates and the projected number of overseas doctors presently in this country who will still be here in that year. Any shortfall will indicate the number of immigrants required in future.

77. It would then be necessary to decide whether this number would be available. There is a major point of policy here as well, however. The main purpose of the present programme of medical school expansion has been to reduce our present heavy dependence on doctors from abroad, following the view of the Todd Commission that "medical demand in Britain ought not to be met by permanent or semi-permanent immigration from developing countries whose own needs are enormous"(26). The question for consideration therefore is not only the extent to which it is possible to meet demand by immigration, but also the extent to which it is desirable.

78. As explained above, one factor relevant to this decision is the number of overseas doctors already here who will wish to stay. For illustrative purposes, a projection of this was made assuming that future death, withdrawal and emigration rates for overseas born doctors will be the same as in the recent past. Since the purpose of this projection was to look at those already here, immigration of doctors in future years was taken as zero (though the projection did include a certain number of overseas born graduates of British schools as explained in paragraph 68). The results of this "nil immigration" projection are given in Table 7.

79. This projection is only intended as background information, and is in no sense a prediction of the future. Whatever decision is made on the

proportion of our long-term needs that should be met by immigration, it seems certain that this country will continue its tradition of providing postgraduate education and training for doctors from abroad. At any given time, therefore, there would be a certain number of overseas born doctors in this country only for a limited period, and as one left a training post would become available for another.* The total number of such doctors in the country at any time would depend on the facilities available for providing training. To show the effect of this, another projection was made assuming that there will be no *net* immigration and that the number of overseas doctors entering will balance the number leaving each year. This would essentially correspond to self-reliance in medical manpower, with all needs for doctors in career posts met from UK graduates or from overseas graduates already in this country. This "nil net immigration projection" is also given in Table 7.

D. TOTAL STOCK

80. The total stock obtained by adding either of these projections to those for British and Irish doctors is given in Table 8 and is shown in Figure 5. For comparison with Section III, Figure 5 also shows the limit of 1·5% per annum growth suggested in that Section on financial grounds. Table 9 shows how the proportion of women will change. More details of the age distribution, the whole time equivalent work force and the effect of varying the assumptions are given in Appendix C. It should be stressed again that these figures should be interpreted with caution and contain a large measure of uncertainty.

Table 8 Projected total stock of doctors active in medicine

Numbers

Year	Active stock (000)	
	Nil immigration	Nil net immigration
1975	78·4	79·8
1985	78·6	90·8
1990	82·7	97·0
1995	86·6	103·1
2000	92·1	109·6

The figures given for 1975 are projections from the actual stock in 1974 on the assumptions stated, and are less than the actual stock in 1975 (80,300).

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*Once an equilibrium position had been reached in which the number of British graduates in training posts was not growing.

Figure 5 Total Stock of Active Doctors (Numbers)

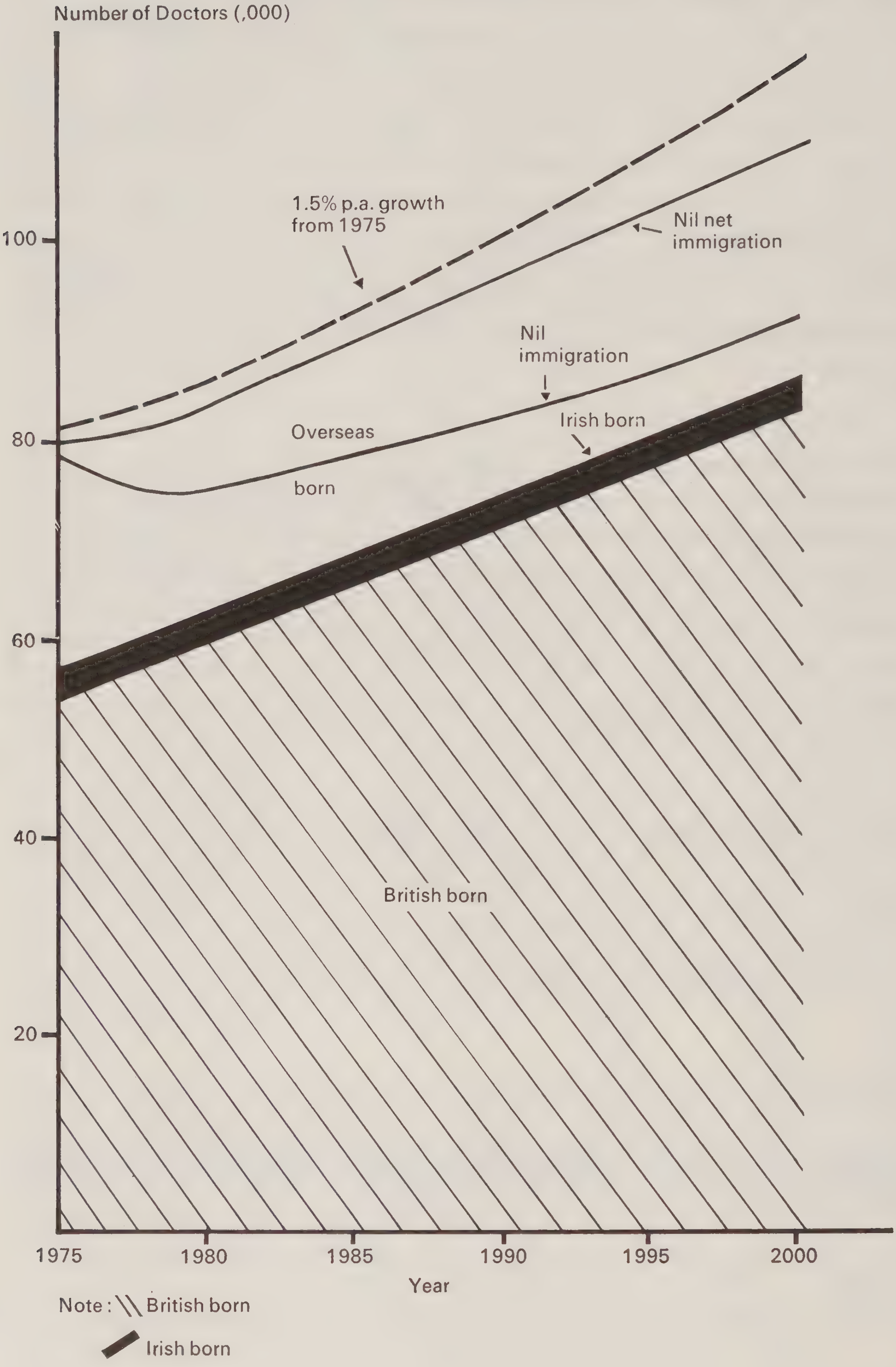

Table 9 Projected proportion of women

Year	Percentage Proportion of women
	%
1975	26
1985	28
1990	32
1995	36
2000	39

The figures give the projected percentage of the total stock of doctors active in medicine who will be women.

81. In the next section, we consider the effect of changing certain of the assumptions we have made. To avoid having to consider the effects of too many changes simultaneously, it will be convenient to choose a definite value for immigration just to provide a reference. We will adopt a projection which provides for a gradual decrease in the number of overseas trained doctors in the country, but it should be emphasised that this choice is purely for the purpose of illustration.

E. SCOPE FOR FLEXIBILITY

82. In view of the problems of long-range planning, it is worth asking what scope there is for flexibility and for changing the size of the available work force in the short-term. Allied to this is the question of the possible consequences of training too few or too many doctors.

83. The former is by far the more familiar problem, and in fact there have never been enough British trained doctors to run the NHS. The possible ways to deal with a shortage are to increase the intake to medical schools, to make up the deficiency by immigration, to encourage doctors already in the country to change from part-time to whole time work or to return to practice after retirement, or to arrange for the work to be done in other ways. The first of these can have very little effect in the short-term, and immigration has been the "traditional" solution. It is possible that if a shortage of doctors develops in the 1990s it could once again be met by medical immigration, although there is no guarantee that the supply of doctors from abroad will continue forever. Developing countries are taking steps to reduce emigration of their doctors, while more and more of the developed countries are tailoring their medical school intakes to their own needs. The comments made in paragraph 77 are also relevant here.

84. Only limited attempts have been made in the past to meet a manpower shortage by persuading doctors to retire later. There are obvious difficulties in such an approach, but it is interesting to consider what the scope for providing extra doctors in this way would be. As an illustrative example,

if the retirement pattern observed in 1974 could be maintained in 1990 this would provide 1,030 extra whole time equivalents over the basic projection* (1·3% more), while a return to 1965 activity rate would give 2,600 whole time equivalents more (3·3%).

85. The other possibility would be greater employment of women doctors. Present programmes for encouraging greater participation of doctors with domestic commitments in the NHS are largely directed to increasing the opportunities for part-time work. If a serious shortage of doctors developed, there might be scope to increase the effective work force by adopting special measures to encourage as many women as possible to work full-time. The figures in Appendix C suggest an increase of up to 5,000 whole time equivalents, or 6·3% of the work force might be possible in 1990.

86. Finally, there is the possibility that changes will occur in medical practice and in the distribution of work between doctors and other staff. Such changes have, of course, taken place and are continuing to do so. The problem is to predict what changes there will be in future. It is clear that there will be some and that whether they take place of their own accord or whether they are deliberately encouraged, they will always have to be in accordance with acceptable professional practice. Further study of these possibilities is necessary.

87. Rather less is known about the possible consequences of over production since we have had very little experience of this. Though there have been times when individual doctors have had difficulty in finding posts because of intense competition, this has been caused by maldistribution between specialties or between different branches of medicine, by imbalance between grades or by the reluctance of doctors to move around the country rather than by too many doctors(3). Since the inception of the National Health Service in 1948, there has never been a stage when the supply of UK trained doctors has exceeded the overall demand. Should it occur, the only acceptable policy for alleviating over-production in the short run would seem to be inducements to early retirement. Retirement of all doctors at 60 would reduce the work force in 1990 by 8,000 whole time equivalents (10%), while retirement at 55 would reduce it by 16%. The most likely consequence of over-production would be that demands to use the available doctors would pre-empt resources and distort priorities, rather than that there would be significant medical unemployment.

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*Here and in the following three paragraphs we have used a projection for overseas born doctors which is just the average of the two projections in Table 6.

F. REDUCING DEPENDENCE ON OVERSEAS DOCTORS

88. The immediate aim of the expansion programme was to enable a higher proportion of posts in hospitals and general practice to be filled by British graduates. The Fifth Commonwealth Medical Conference recommended that the most useful contribution developed countries could make to meet the challenge of the "brain drain" would be to aim at achieving self-sufficiency in their own professional resources. Figure 5 shows that we are still a long way from achieving self-reliance in medical manpower. If medical immigration ceased now the number of doctors in the country would actually fall as those overseas doctors who are here only temporarily left and it would be 1985 or later before the number of doctors would be back to the present level. Without continued immigration the rate of growth of doctor numbers in the future will be substantially lower than that experienced during the last 50 years.

G. MATCHING SUPPLY AND DEMAND

89. The aim of this paper is to explain present policy and to stimulate discussion rather than to reach final conclusions. It might be worth drawing one preliminary conclusion from the figures presented in the last few sections, however. This is that if the medical school intake stays at 4,000 a year to the end of the century, the growth in total numbers without net immigration will still be less than the limit of 1·5% per annum growth suggested on financial grounds in Section III. This can be seen from Figure 5. This means that resources could be available to employ the additional doctors and to provide the necessary support facilities. Whether this is the best use of the resources is a question of priorities.

VI Short-Term Problems

90. There are a number of short-term problems in medical manpower, which we discuss in this Section.

A. HOSPITAL CAREER STRUCTURE

91. At present, approximately 3,000 doctors a year graduate from British universities and there are somewhat more than 3,000 posts for pre-registration house officers. As the number of graduates increased to about 3,600 in the late 1980s, it will be necessary to increase the number of pre-registration posts correspondingly. The English Regional Health Authorities and the Scottish and Welsh Departments have accepted that this must be given a high priority.

92. When vocational training for general practice becomes mandatory, virtually all British graduates will need to spend one or two years as senior house officers. In 1976 there were 8,750 SHOs in post in Great Britain, so that there are already more than enough posts for this purpose, although it is likely that not all of them are educationally satisfactory. When due allowance is made for the numbers who might enter general practice or the community health services, the demand for registrar posts is likely to be well below 2,500 a year even when the target number of graduates is reached. Again, the number of posts at present (6,400 in 1976) is already more than sufficient to allow all these doctors to spend two years in the registrar grade.

93. The number of senior registrar openings per year at present is about 700 to 800, which compares well with the current annual demand for doctors to fill consultant posts and the equivalent academic or research posts. The large discrepancy between the number of registrar posts and the number of senior registrar posts reflects the heavy dependence of the Hospital Service on doctors from abroad who do not make careers in this country. As has often been pointed out, this discrepancy cannot continue in a service staffed largely by doctors who want life-time careers in this country, and the existing staffing pattern in the hospital service cannot be maintained indefinitely.

94. Changes in the medical staffing structure in hospitals are not discussed in this paper although an increase in the number of British graduates is likely to have a profound effect on it. It must be emphasised that the problem arises not because of the total numbers involved but because of the proposed change from a service largely staffed by doctors in this

country only temporarily to one largely staffed by those here permanently. Whatever the number of graduates of British medical schools, the ratio of career to training posts in the hospital service must change. Cutting the number of graduates to match the present career openings would solve the problem only if the hospital service could be run with substantially fewer doctors overall than at present.

95. It is possible to make rough estimates of the number of career posts that might be available over the next 10 years, and of the number of doctors who will be seeking such posts. At present, there are about 2,600 career vacancies a year – 700 odd for consultants, 1,300 for unrestricted principals in general practice and the remainder in other career posts in the NHS or in universities, industry etc. If present trends continue, therefore, there might be some 26,000 such vacancies over the next 10 years.

96. The candidates for these posts would be:

a. British or Irish born doctors currently in training posts in Great Britain. There were 13,000 of these in 1976; on past trends perhaps 2,000 will emigrate, die or withdraw from medical practice before seeking career posts, leaving 11,000 as candidates for such posts.

b. Overseas born doctors currently in training posts. There were 9,800 in 1976; little is known about the proportion who wish to stay permanently. The Department has commissioned a research study on this subject but it will be some time before the results are available. For the sake of illustration, therefore, it was assumed that all overseas doctors currently in the senior registrar grade or in trainee posts in general practice would wish to take career posts in this country, and that half of those in the more junior grades would choose to remain – a total of 5,300 candidates for career posts.

c. British born doctors currently abroad who might return to this country to seek career posts. On past trends this group might number 5,000 to 6,000.

d. Doctors who will graduate from British medical schools over the next 10 years. There might be 32,000 graduates, some of whom will emigrate or leave medicine. On past trends 26,000 to 27,000 will be active in medicine at the end of the period. Of course, not all of these will be fully trained by then.

97. Putting all this together suggests that if present trends continue there will be 19,000 to 24,000 British graduates in training posts in 10 years time, compared with a total of 23,000 doctors in training posts at present (whether they graduated here or abroad). This means that the ratios in the different grades will not be very different from the present position if immigration is not substantial. This can be achieved, however, only because of the "cushion" of 4,500 overseas doctors who will leave the training grades over the 10 years without seeking career posts in the UK.

There will be no similar cushion to help in the 10 years after that. It is clear that the hospital career structure needs revision.

B. CAREER CHOICE

98. Finally, we turn to the other problem to which a solution is desirable. The estimates in Section IV were for the number of doctors needed in various branches of the profession or various parts of the country but it is substantially easier to identify a need for 100 doctors than to ensure that the 100 additional medical students will work where needed. It is a truism that the shortages of doctors are worst in the areas that have been least attractive to doctors in the past and much of the expansion programme will be wasted if the doctors that are produced cannot be attracted where they are needed. This problem, like the previous one, is long-standing. Again, the fact that we are planning to become more self-reliant in medical manpower makes a solution much more urgent.

VII Summary

99. Our aim in this paper has not been to reach conclusions and on several of the problems we have raised it has been clear that the evidence is not yet available for conclusions to be drawn. The intent rather has been to stimulate discussion and to identify the areas where more research is needed.

100. It has become generally recognised in recent years that it will never be possible to meet all demands for health care and that it is not sensible simply to identify some figure as the future "need" for doctors and to train the number of doctors necessary to meet that "need". Choices have to be made as to which demands can or should be met; alternative ways of meeting them must be explored; we must look for areas in which we can manage with less doctors as well as areas in which we cannot manage without more. In this paper we have tried to show the consequences of what might be regarded as conservative working assumptions – generally that past trends will continue and that there will not be major changes in the nature of medical work or in the role of the doctor. We hope that the projections we have given will go some way towards re-assuring those who have suggested that present policies based on these assumptions will result in massive over-production of doctors. Before it is clear that these policies are the best possible it will be necessary to examine these assumptions critically and to explore alternatives.

101. The main issues raised in this paper on which views are invited by the Department are summarised briefly below:

Forecasting and resources

a. Although the first question to be asked in considering the future annual intake of medical students is how many doctors will be needed in future years, no country has yet succeeded in devising a satisfactory means of assessing this. Is it sensible to assume that because medical practice is constantly changing and public expectations are constantly rising, demand is always likely to exceed feasible supply so that the more appropriate question is how many doctors are we likely to be able to afford? Are there techniques which could be developed to give better forecasts of future demand? (Paragraphs 17 to 23). We have made projections on certain assumptions of the long-run growth of resources (Section III) and of the potential growth in the number of doctors (Section V) – are there any other possible sets of assumptions that should be considered?

b. The Royal Commission on Medical Education suggested that resources should be available to afford a growth of 1·5% per annum in the number of doctors. Is this a reliable indicator of future growth for planning purposes? Would the money available for extra doctors be better spent on other types of staff or facilities in the Health Service (paragraphs 25 to 33)?

Demand

c. It is possible to identify a number of ways in which extra doctors could be used. These include maintaining the present level of care for a growing and ageing population (paragraphs 37 to 43), reducing existing geographical disparities (paragraphs 44 to 47), meeting present shortages in certain specialties (paragraphs 56–59), improving services and introducing new techniques (paragraph 51). More doctors would be needed to meet the commitment given by the Secretary of State to reduce working hours (paragraph 53) or as a result of other changes in medical practice (paragraphs 48 to 50). Are the various estimates in part IV of the number of doctors necessary for these purposes reasonable? What priorities should be given to these various goals? Are there any other obvious uses of doctors which should be given a high priority in the period under consideration?

d. To what extent is there scope for reducing the number of doctors employed in various areas at present? Can one estimate the savings in manpower to be achieved by greater emphasis on prevention or on self-medication? (paragraph 62).

e. What scope is there for the greater use of non-medical staff? What areas of research into this would be most fruitful? (paragraph 58).

f. Would changes in the proportion of doctors in the various hospital grades make a significant impact on the numbers needed to provide a 24 hours a day service in hospitals? (paragraph 49).

g. Is there scope for increasing the productivity of doctors by the better use of technology? In which areas would it be profitable to conduct research? (paragraph 51).

h. Can one estimate the possible effect on doctor numbers of the policy of adjusting the balance of care to provide greater support in the community(13)?

Supply

i The results of various projections of future doctors numbers are shown in figure 5. This shows that the present programme of medical school expansion will lead to a growth in doctor numbers of less than 1·5% per year unless there continues to be substantial medical immigration. Are the assumptions made in these projections reasonable? (paragraphs 66–79.)

j. To what extent is it possible to meet the demand for more doctor time by encouraging later retirement or by inducements for doctors with domestic commitments to work full time rather than by training more doctors? (paragraphs 82–85.)

k. What proportion of doctors in this country should be British graduates? How many posts should be made available for doctors from overseas coming to this country for postgraduate training, and to what extent should the needs for career posts be filled by doctors trained overseas? (paragraphs 75–79.)

l. The present period of long training makes it difficult to introduce any substantial measure of flexibility into forward planning. Is there scope for changes in the training of doctors which would lead to greater flexibility?

m. The EEC Directives on free movement of labour and the 1978 Medical Act are likely to affect the pattern of migration. Are there other potential developments at home or abroad that should be taken into account?

Short-term problems

n. The uneasy pyramidal shape of the medical staff structure within hospitals is only maintained through the employment of doctors from overseas who provide support at junior levels during their temporary stay in this country. British replacements of staff at this level, seeking a life-time career, would have no outlet within the Hospital Service. The extent to which medical work can be classified as appropriate for a trainee or a doctor in a permanent post is not known, and has not been explored in this paper but an alteration in the staffing structure would appear to carry with it the inevitable consequence of change in the level at which work is done. What would be the effect of changes in the career structure on the provision of medical services, and on the number of doctors needed? (paragraphs 91–97).

o. How can British graduates be attracted into the specialties and the parts of the country where they are most needed? (paragraph 98).

Decision making

p. What is the best way to reach a consensus on these various questions and how should the problem of medical manpower best be kept under review?

102. Comments on these or on any other points raised in this paper should be sent to:

Division P1B, DHSS
Room 402, Eileen House
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London SE1 6EF

Division 4A, SHHD
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Edinburgh EH1 3DE

or

Division HSP, Welsh Office
Room 421, Pearl Assurance House
Greyfriars Road
Cardiff CF1 3JL

APPENDIX A

Basic Statistical Information

1. The following tables set out the basic information on past and present medical manpower in Great Britain, on medical schools, and on the medical staff of the NHS. The figures are derived from different sources and are not all strictly comparable.

2. The information in Tables A1–A5 is derived from the Central Medical Recruitment Committee index – a list of all registered civilian doctors in Great Britain, maintained jointly by DHSS and the British Medical Association. Those in Tables A10–A12 are obtained from the annual census of medical staff in the NHS carried out by the Health Departments. The criteria for inclusion are rather different in the two cases so that figures for NHS staff quoted in Table A2 differ from those in later tables. The main reasons for the differences are as follows:

a. Doctors holding temporary registration were not included in CMRC data prior to 1973 but were included in NHS returns.

b. For the purposes of CMRC, doctors holding more than one appointment are counted only once – generally under the category listed first in Table A2. (The only exception is NHS general medical practitioners who also hold hospital appointments under paragraph 94 of the Terms and Conditions of Service; these are counted as GMPs). Doctors holding appointments both in the general medical service and in the hospital service are included under both headings in the tables derived from NHS census data.

c. Doctors holding appointments in the armed forces are excluded from CMRC; they are included in the NHS census if they also hold NHS appointments.

d. Doctors who hold an appointment in the hospital service under paragraph 94 but who hold no other appointment in the NHS are excluded from tables based on the annual census but are included in the tables based on the CMRC index.

e. Doctors whose only appointment in the NHS is as a locum are excluded from the census based tables but are included as NHS staff in the tables based on CMRC.

f. The NHS census counts only those doctors who are actively employed in the Hospital Service on 30 September of the year in question or those providing general medical services through the NHS on 1 October of the year in question. A certain number of doctors whose main employment is in the NHS but who are not in post at 30 September or 1 October are therefore excluded from the NHS tables; they are included as NHS staff in the CMRC tables.

g. Some minor disparities will arise because of the different methods used to collect and validate the annual census information and the CMRC index information.

3. In the tables containing an analysis by place of birth, doctors born in the Channel Islands, the Isle of Man, or in Ireland (part of Ireland unspecified) are included with those born in Great Britain; those whose place of birth is unknown are included with those born elsewhere.

Table A1 **Fully and provisionally registered civilian doctors active in medicine: analysis for selected years showing sex, population and number of doctors per million population (Great Britain)**

Year	Doctors[1]			Population (millions)	Doctors per million population
	Total	Male	Female		
1911	26,700	26,090	610	40·83	654
1921	27,760	26,260	1,500	42·77	649
1931	33,390	30,060	3,330	44·80	745
1951	48,220	40,710	7,520	48·85	987
1955	53,260	44,960	8,300	49·55	1,075
1961[2]	59,200	49,760	9,440	51·28	1,154
1965	61,141	51,279	9,862	52·89	1,156
1966	62,545	52,239	10,306	53·18	1,176
1967	63,452	52,868	10,584	53·31	1,190
1968	64,528	53,488	11,040	53·55	1,205
1969	66,158	54,724	11,434	53·75	1,231
1970	68,035	55,766	12,269	53·89	1,262
1971	68,907	56,311	12,596	54·07	1,274
1972	69,204	56,137	13,067	54·25	1,276
1973	72,177	57,643	14,534	54·39	1,327
1974	73,202[4]	57,981	15,221	54·42	1,345
1975[3]	74,600[4]	58,600	16,000	54·41	1,370
1976[3]	75,900[4]	59,200	16,700	54·39	1,400

[1] All civilian doctors active in medicine.

[2] From 10% sample census, adjusted for bias.

[3] Provisional figures.

[4] In addition 5,400 doctors held temporary registration in 1974, 5,700 in 1975 and 5,300 in 1976. Figures for earlier years are not available.

Source: 1911, 1921, 1931, 1951, 1961: Census. 1955: Willink Committee. 1965–1976: CMRC. Population from OPCS.

Table A2 Fully and provisionally registered civilian doctors: analysis by occupation for selected years (Great Britain)

Number

	1965	1970	1974
Total: All Staff	73,042	81,284	84,935
NHS Senior Hospital Doctors	13,241	15,742	18,014
NHS Junior Hospital Doctors	13,001	15,359	15,123
NHS Practitioners in GMS	23,726	23,923	26,044
NHS Para 94 hospital appointments only	838	1,265	2,016
Local Authorities/NHS Community Health	3,261	3,703	4,202
Universities and Institutes	1,564	1,756	1,639
Other medical employment	4,232	3,190	2,671
Unknown	1,278	3,097	3,493
Not working in medicine or retired	11,901	13,249	11,733

Source: CMRC.

Table A3 Fully and provisionally registered civilian doctors: analysis by place of birth for selected years (Great Britain)

Number

Place of birth	1965		1970		1974	
	No	%	No	%	No	%
Total: all places of birth	73,042	100	81,284	100	84,935	100
Born GB	55,298	75·7	59,214	72·8	62,648	73·8
Born Northern Ireland/ Irish Republic	4,413	6·0	4,277	5·3	4,064	4·8
Born elsewhere	13,331	18·3	17,793	21·9	18,223	21·5

Percentages may not add up to 100 because of rounding.
Source: CMRC.

Table A4 Migration of fully or provisionally registered doctors: analysis by place of birth (Great Britain)

Number

Year ending 30 September	Doctors born in the UK or Irish Republic		Doctors born outside the UK and Irish Republic	
	Outflow	Inflow	Outflow	Inflow
1963/64	1,640	1,090	2,050	2,390
1964/65	1,050	530	1,260	1,630
1965/66	940	560	1,070	1,940
1966/67	1,030	580	1,390	1,870
1967/68	1,070	590	1,360	2,100
1968/69	840	520	900	2,100
1969/70	940	650	1,250	1,630
1970/71	860	530	1,530	1,450
1971/72	810	700	1,330	1,730
1972/73	1,040	670	1,230	1,850
1973/74	1,010	560	1,170	1,800
1974/75	1,040	570	1,020	1,470

All figures provisional.
Source: CMRC.

Table A5 Fully or provisionally registered civilian doctors born in Great Britain or Ireland: outflow from Great Britain by last known occupations

Number

Year ending 30 September	Total	Last occupation prior to leaving Great Britain			
		NHS Hospital Service	NHS General Medical Service	Other[1]	Unknown
1964/65	1,050	250	170	140	490
1965/66	940	290	180	190	280
1966/67	1,030	350	110	190	380
1967/68	1,070	460	120	220	270
1968/69	840	360	80	220	180
1969/70	940	400	80	260	200
1970/71	860	340	60	220	240
1971/72	810	280	60	180	290

[1] The column headed "Other" includes doctors known to be employed outside the NHS, retired or not active in medicine prior to leaving the country.

Source: CMRC.

Table A6 Doctors in HM Forces

Year	Number
1966	1,580
1967	1,610
1968	1,590
1969	1,600
1970	1,550
1971	1,490
1972	1,450
1973	1,420
1974	1,350
1975	1,310
1976	1,290
1977	1,250

Source: Ministry of Defence.

Table A7 Medical students admitted to pre-clinical courses and number obtaining a first registrable qualification: analysis by sex (Great Britain)

Academic year (ending 31 July)	Number admitted to pre-clinical courses			Number obtaining first registrable qualification		
	Total	Male	Female	Total	Male	Female
1960/61	2,020	1,528	492	1,844	1,397	447
1961/62	2,103	1,572	531	1,776	1,342	434
1962/63	2,192	1,669	523	1,844	1,384	460
1963/64	2,281	1,739	542	1,731	1,322	409
1964/65	2,407	1,871	536	1,805	1,332	473
1965/66	2,478	1,937	541	1,939	1,458	481
1966/67	2,502	1,933	569	1,933	1,463	470
1967/68	2,560	1,940	620	2,105	1,567	538
1968/69	2,693	2,007	686	2,126	1,632	494
1969/70	2,695	1,987	708	2,114	1,621	493
1970/71	2,878	2,066	812	2,190	1,704	486
1971/72	3,032	2,084	948	2,343	1,739	604
1972/73	3,123	2,149	974	2,289	1,709	580
1973/74	3,276	2,212	1,064	2,594	1,896	698
1974/75	3,281	2,160	1,121	2,644	1,900	744
1975/76	3,468	2,249	1,219	2,749	1,895	854
1976/77	3,654	2,362	1,292	3,045	2,073	972

Source: University Grants Committee.

Table A8 Number of applicants for and admissions to pre-clinical courses at medical schools (Great Britain)

Number

Academic year (ending 31 July)	All students		British based		Other	
	Applying[1]	Admitted	Applying[1]	Admitted	Applying[1]	Admitted
1965/66	6,274	2,478	4,917	2,312	1,357	166
1966/67	7,361	2,502	5,722	2,391	1,639	111
1967/68	6,948	2,560	5,624	2,442	1,324	118
1968/69	6,946	2,693	5,733	2,556	1,213	137
1969/70	7,577	2,695	6,417	2,582	1,160	113
1970/71	8,971	2,878	7,477	2,770	1,494	108
1971/72	11,177	3,032	9,274	2,929	1,903	103
1972/73	12,915	3,123	10,759	3,035	2,156	88
1973/74	13,003	3,276	10,746	3,183	2,257	93
1974/75	12,046	3,281	9,936	3,186	2,110	95
1975/76	12,015	3,468	9,697	3,354	2,318	114
1976/77	12,098	3,654	9,817	3,549	2,281	105

[1] Applying through UCCA in previous September. In addition some prospective students applied direct to the university.

Source: University Grants Committee and the Universities Central Council on Admissions.

Table A9 Intake to medical schools in Great Britain, by school: 1975 intake and target intake

University or college	1975[1]	Target	
Birmingham	163	160	
Bristol	122	120	
Cambridge	225	220	
Leeds	131	216	
Leicester	49	144	
Liverpool	155	150	
London:	1,042	1,200[2]	
St Bartholomew's	118	200	
London Hospital	100		
University College	116	200	
Royal Free	104		
Middlesex	90	85	
St Mary's	97	90	
St George's	—	150	
Charing Cross	120	120	
Guy's	112	355	Guy's and King's – 195
King's College	123		King's, St Thomas' and Westminster – 160
St Thomas'	62		
Manchester	200	200	
Newcastle	130	200	
Nottingham	96	192	
Oxford	103	100	
Sheffield	133	150	
Southampton	102	130	
National School of Medicine	151	150	
Aberdeen	130	150	
Dundee	104	110	
Edinburgh	147	200	
Glasgow	205	220	
St Andrews	80	75	
Total (GB)	3,468	4,087	

[1] Academic year ending 31 July 1976.

[2] London targets based on plans for linking medical schools. The plans assumed the King's intake would be split. The plan for a combined Guy's/King's entry has been abandoned because of size, and that for a combined King's/St Thomas'/Westminster entry has been postponed.

Source: UGC.

Table A10 Medical staff in the NHS: analysis by type of service for selected years[1] (Great Britain)

Year	Doctors Hospital Service		GMS
	Number	wte[2]	Number
1949	15,950[3]	13,449	. .
1953	18,500[3]	16,100	23,663[4]
1959	20,950[3]	18,767	25,012[4]
1966	25,153	22,802	24,010
1971	30,037	27,958	24,668
1976	36,258	33,909	26,418

Notes:

[1] Doctors may hold appointments in both services.

[2] 1953 is estimated. Except for 1971 and 1976, figures may not be strictly comparable between years.

[3] Estimated. There may be some duplication due to more than one part-time appointment being held by the same doctor.

[4] May be overstated owing to double-counting of assistants who were also principals.

Source: DHSS.

Table A11 Permanent hospital medical staff 1970–1977: analysis by grade and place of birth (Great Britain)

Number

Grade and place of birth	Number of staff in post at 30 September							
	1970	1971	1972	1973	1974[1]	1975	1976	1977
All grades[2]	28,926	30,037	31,441	32,790	33,724	35,327	36,258	37,261
UK and Irish born	19,903	20,782	21,553	22,126	22,564	23,557	24,402	25,422
Born elsewhere	9,023	9,255	9,888	10,664	11,160	11,770	11,856	11,839
Consultants	11,206	11,543	11,902	12,451	12,844	13,200	13,641	13,785
UK and Irish born	9,920	10,198	10,493	10,930	11,193	11,445	11,760	11,847
Born elsewhere	1,286	1,345	1,409	1,521	1,651	1,755	1,881	1,938
Senior hospital medical officers[3]	540	491	459	351	286	262	152	127
UK and Irish born	440	401	377	295	248	226	132	111
Born elsewhere	100	90	82	56	38	36	20	16
Medical Assistants	1,093	1,155	1,199	1,172	1,238	1,311	1,261	1,277
UK and Irish born	724	776	797	764	818	891	837	850
Born elsewhere	369	379	402	408	420	420	424	427
Senior Registrars	1,998	2,180	2,347	2,499	2,578	2,703	2,869	3,017
UK and Irish born	1,605	1,706	1,796	1,903	1,925	2,005	2,146	2,268
Born elsewhere	393	474	551	596	653	698	723	749
Registrars	5,524	5,693	5,749	5,884	5,866	6,264	6,408	6,567
UK and Irish born	2,534	2,672	2,750	2,783	2,709	2,849	2,951	3,028
Born elsewhere	2,990	3,021	2,999	3,101	3,157	3,415	3,457	3,539
Senior house officers	5,551	5,936	6,624	7,447	7,850	8,478	8,746	9,197
UK and Irish born	2,218	2,573	2,770	3,134	3,253	3,603	3,917	4,359
Born elsewhere	3,333	3,363	3,854	4,313	4,597	4,875	4,829	4,838
House officers	2,925	2,968	3,094	2,955	3,005	3,063	3,127	3,240
UK and Irish born	2,393	2,402	2,517	2,290	2,388	2,508	2,619	2,920
Born elsewhere	532	566	577	665	617	555	508	320

[1] May be understated due to the reorganisation of the National Health Service at 1 April 1974.

[2] Includes a small number of junior hospital medical officers (up to 1973) and ungraded staff.

[3] With or without allowance.

Source: DHSS.

Table A12 General medical practitioners 1949 to 1977 (Great Britain)

Number

Year[1]	Total	Unrestricted principals	Restricted principals	Assistants	Trainees	Average list size of unrestricted principals
1949	. .	18,000[2]		. .	. .	. .
1952	23,006[3]	19,660	892	1,986[3]	468	. .
1956	24,788[3]	21,718	811	1,804[3]	455	. .
1961	25,139	22,820	727	1,335	257	2,257
1966	24,010	22,404	632	820	154	2,407
1967	24,005	22,418	599	834	154	2,426
1968	24,107	22,529	569	833	176	2,431
1969	24,239	22,727	539	741	232	2,431
1970	24,458	22,961	497	727	273	2,413
1971	24,668	23,252	455	657	304	2,400
1972	25,183	23,722	423	633	405	2,363
1973	25,580	23,965	374	639	602	2,343
1974	25,844	24,255	338	526	725	2,327
1975	26,127	24,464	340	441	882	2,307
1976	26,418	24,657	323	450	988	2,294
1977	26,810	24,939	315	435	1,121	2,275

[1] Figures relate to 1 July prior to 1961 and to 1 October thereafter.
[2] It was estimated in 1949 that there were 18,000 principals in the NHS in England and Wales.
[3] Assistants who were also principals in their own right are included as assistants as well as principals.

Source: DHSS.

APPENDIX B

International comparisons

1. International comparisons can be misleading. Geographical and genetic factors, different social conditions and different age structures of a population can all affect the need for health care, whilst differences in the system of provision may change the number of doctors required to meet this need. All statistics comparing different countries must be interpreted with caution and it is difficult to draw conclusions from experience elsewhere. There has recently been a great deal of discussion of medical manpower contrasting this country with others, and in particular it has been claimed that we are still expanding our medical schools at a time when all (or most) other western countries are cutting back. To put these claims in perspective, this Appendix contains a brief comparison of the provision of doctors and of medical education in the nine countries of the EEC, in North America, Australia and New Zealand.

2. Table B1 compares the number of doctors and the ratio of doctors to population for these countries while Table B2 gives comparative figures on medical education and shows the ratio of medical graduates per year both to total population and to the number of doctors currently in practice. The relevance of the last statistic is that it shows the potential for growth in doctor numbers. A graduate output of between 2·5% and 3·5% of the total stock is needed to replace doctors who retire or die; in the absence of migration, any excess over this figure provides the capacity for growth.

Table B1 Medical manpower – international comparisons

Country	Year	Population (Millions)	Number of Doctors	Doctors per 1,000 people	Percentage of foreign born doctors
Belgium	1975	9·81	18,510	1·89	0·8
Denmark	1974	5·06	9,030	1·79	0·7
West Germany	1975	61·65	118,730	1·93	6·9
France	1975	52·66	80,960	1·46	Less than 1%
Eire	1975	3·13	3,760	1·20	—*
Italy	1975	56·01	126,330	2·26	0·2
Luxembourg	1975	0·36	383	1·06	0·3
Netherlands	1975	13·73	21,890	1·59	1·9
USA	1974	211·9	350,600	1·65	19
Canada	1973	22·3	36,100	1·62	—*
Australia	1972	12·96	17,970	1·39	—*
New Zealand	1975	3·08	3,850	1·25	—*
Great Britain	1975	54·51	80,300	1·47	27

* Figures not available. In Canada, 47% of new doctors were immigrants in 1973; while 25% of Australian doctors in 1972 had been trained abroad.

Official sources (27).

Table B2 Medical education – international comparisons

Country	Year	Graduates in medicine	Graduates per 100,000 people	Graduates per 100 doctors	Remarks
Belgium	1975	1,205	12·3	6·5	75% increase in graduates since 1970
Denmark	1974	740	14·7	8·2	
West Germany	1972	4,712	7·6	4·4	75% increase in intake from 1970 to 1975
France	1975	8,300	15·8	10·2	Output doubled from 1971–1975
Eire	1975	430	13·7	11·4	
Italy	1972	5,410	9·7	5·3	
Luxembourg	—	—	—	—	
Netherlands	1975	1,460	10·6	6·7	50% increase in graduates since 1970
USA	1974	11,680	5·5	3·3	25% increase in graduates expected by 1985
Canada	1973	1,330	5·9	3·7	40% increase in graduates expected by 1980
Australia	1972	880	6·8	4·9	
New Zealand	1975	300	9·7	7·8	
Great Britain	1975	2,644	4·8	3·3	
Target Output		3,600	6·5	4·0	

"Graduates" refers to all doctors qualifying within the country concerned.
Official sources (27).

3. There are marked differences immediately apparent from the tables. All the other EEC countries produce substantially more doctors in relation to their population than we do, and all have the capacity for substantial growth from their own medical schools (Luxembourg, which does not have a medical school, is an exception). None of these countries depends to any substantial extent on foreign doctors. The USA, Canada and Australia on the other hand are comparable to Britain in graduate production and are heavily dependent on immigrants. It is clear that decisions on expanding or cutting back on graduate production in the other EEC countries, at least, are based on very different considerations from those that apply here.

4. A particularly interesting comparison in this context is that between Scotland and the rest of Great Britain. There are nearly a third more doctors per person in Scotland than in Great Britain as a whole, and on the figures presented in Section V, the ratio of doctors to population for Britain as a whole will not reach the present value in Scotland during the course of this century. There are several possible reasons for a higher level of provision in Scotland – a more scattered population reduces the number of patients for which a GP can reasonably accept responsibility, there are disproportionate demands for staff time to be devoted to undergraduate teaching because of the comparatively large number of medical schools in Scotland, and so on. Mortality rates are higher, which

might indicate a greater demand for medical care. Nevertheless, if the number of doctors in a country owes less to identifiable medical need than to the community's overall view of the place of health care in the table of economic and social priorities, Scottish experience may give a valuable indicator of the likely trend elsewhere in Great Britain.

APPENDIX C

The Computer Model

1.1. This Appendix gives a detailed description of the model described in Section V of the paper, summarises the basic data used as the input, and gives the results of the various projections.

A. THE BASIC MODEL

2.1. The computer model is a model of the total stock of all fully or provisionally registered civilian doctors in Great Britain. This definition of the stock was chosen with an eye to the data available (see paragraph 4.1 below), and it is important to stress both what is included and what is not. The model is *not* a model of NHS manpower alone but includes doctors working outside the NHS as well as those who are inactive or retired (unless they are no longer registered). Two groups were excluded:

a. Doctors holding temporary registration only. This group is discussed in detail in Section D below.

b. Doctors in the armed forces. Although there is no difficulty in principle in including this group, in practice it is more convenient not to. Such doctors form only a small part of the total stock (approximately 1,300 at present) and the model does take account of movements to and from the armed forces.

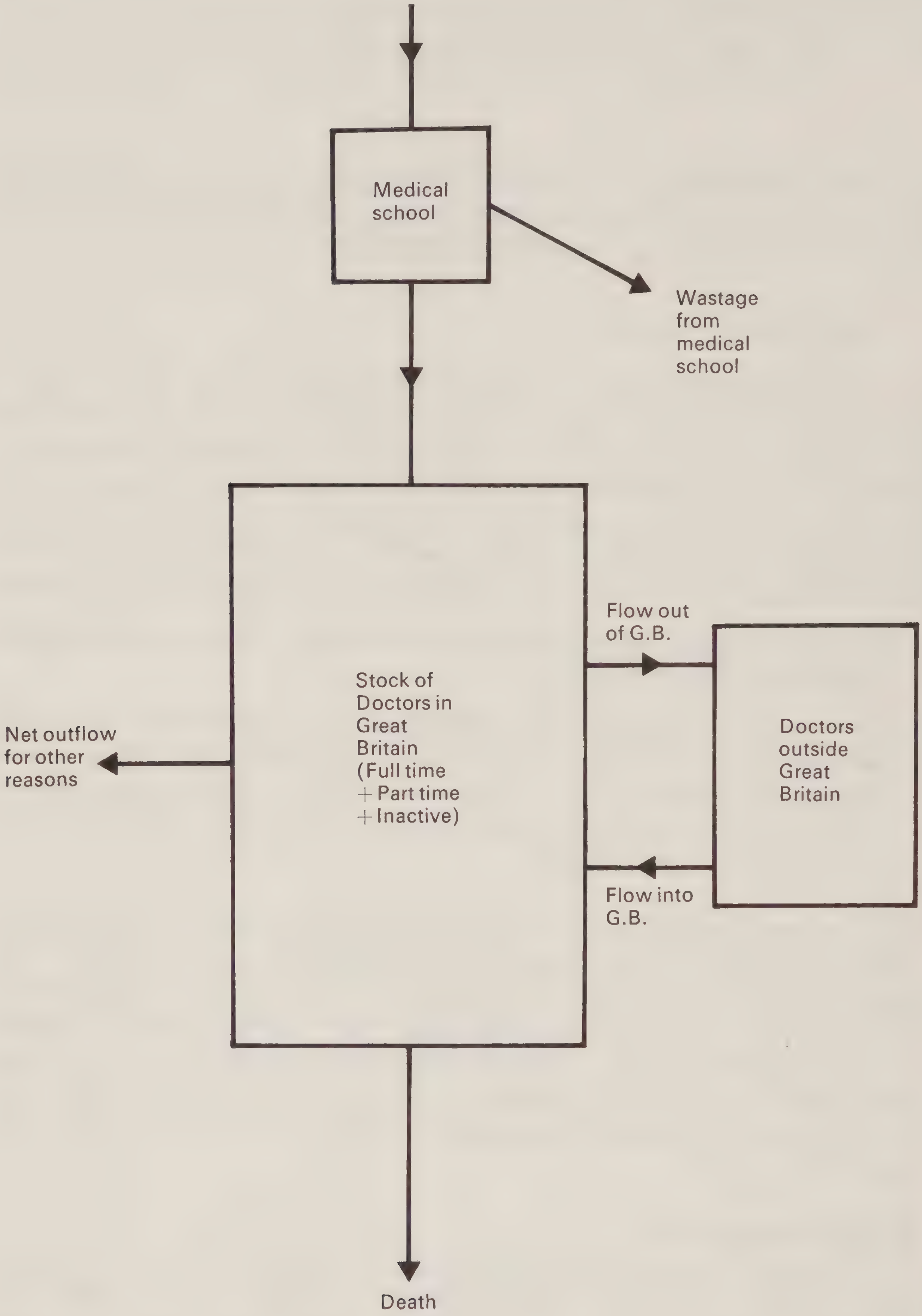
2.2. The stock was classified by sex and by place of birth – Great Britain, Northern Ireland, Irish Republic and elsewhere – giving eight "categories" in all. The classification by place of birth was once again dictated to a certain extent by the available data – the "elsewhere born" category is a heterogeneous group with a composition which may well change over time, but a further breakdown did not seem justified by the data. Irish doctors were treated separately to facilitate comparison with other analyses.

How the Model works

3.1. Figure C1 illustrates how the stock levels change for any one category. Most of the flows are self-explanatory although that labelled "Net Outflow for 'Other' Reasons" may require explanation. This flow covers movement to and from the armed forces, and removal from the Register for various reasons such as non-payment of fees or disciplinary action by the GMC.

3.2 Within each category the stock was divided by age; in the model there were 56 age groups (age 20, 21, 22 . . . up to 74, age 75 or more), whilst

Figure C1 Flows into and out of stock of doctors


Medical school
Wastage from medical school
Flow out of G.B.
Stock of Doctors in Great Britain (Full time + Part time + Inactive)
Net outflow for other reasons
Doctors outside Great Britain
Flow into G.B.
Death

to cut down on the amount of output, the results were printed in 12 age bands (less than 25, 25 to 29 . . . 70 to 74, 75 plus). The stock in each *age group* was adjusted year by year according to the relationship:

> (Stock at end of year) = (stock at start of year) + (flow of doctors into GB) + (output from medical schools) − (deaths) − (flow of doctors out of GB) − (net outflow for other reasons)

for each category of doctors. At the end of each year, the stock was "aged" by one year – that is, the stock number of age group 20 replaced the number for age group 21 which in turn replaced the number for age group 22 and so on, up to age group 74 which was added to age group 75 plus.

3.3. The process of paragraph 3.2 can be repeated into the future for as many years as necessary, to give a total stock by age, sex and place of birth. The *active* stock was then calculated by assuming that a given proportion of each age group in each category was active. The proportions change over time as explained more fully below (paragraphs 13 and 14).

Sources of data

4.1. The basic source of data for the model was the Central Medical Recruitment Committee index (CMRC) – a register of all fully and provisionally registered civilian doctors in Great Britain at 30 September each year, maintained jointly by the DHSS and the BMA. Much of the input to the model was obtained as the average of several years data from this index. At the time the model was run, CMRC data was available for flows up to 1972 and for stocks up to 1974. It is planned to run the model again as more recent data becomes available. Although there are some deficiencies in the CMRC data, in general it provides a basic source of information far more detailed and comprehensive than is available for almost any other group in the population.

4.2. Data from the Index was supplemented by information from the University Grants Committee, from the University Statistical Record, from the 1971 Census and from various ad hoc surveys which are described below as they are referred to.

4.3. The model is designed to project average trends over the long term and is not intended to predict the stock over the short term. Fluctuations in emigration rates, university pass rates and so on mean that individual years may lie above or below the long term trend. The fact that projections were based on the 1974 stock using assumed long term migration rates rather than actual migration rates means that the projected stock in 1975 was less than that actually observed. In particular, preliminary figures suggest that there was a net inflow of overseas doctors in 1974/75 and that the outflow of British doctors in that year was rather above the historic rate. The actual stock in 1975 thus differs from that projected on the basis of a net outflow of overseas doctors and historic emigration rates. The actual difference is very small and well within the limits of accuracy of the model as a whole, but this point should be remembered in comparing the figures in Section V of the text with those in Appendix A.

B. FACTORS ENTERING THE MODEL

Starting stock

5.1. As a starting point for the projection, the model used the stock in 1974, broken down by place of birth, sex and age, from the CMRC index. This starting stock is given in Table C1.

Table C1 Fully and provisionally registered civilian doctors in Great Britain at 30 September 1974: analysis by age, sex and place of birth

Age	Place of birth								Total
	Great Britain		Northern Ireland		Irish Republic		Elsewhere		
	Male	Female	Male	Female	Male	Female	Male	Female	
Under 25	1,240	460	—	—	—	—	—	—	1,700
25–29	6,300	2,330	80	40	120	40	1,920	630	11,460
30–34	4,800	1,700	40	20	140	40	3,190	810	10,740
35–39	4,580	1,500	40	10	60	30	2,760	610	9,590
40–44	4,540	1,440	50	20	100	50	1,830	380	8,410
45–49	5,310	1,770	90	20	200	110	1,140	290	8,930
50–54	5,300	1,560	130	40	350	90	830	240	8,540
55–59	4,610	940	150	30	410	100	680	160	7,080
60–64	3,730	680	120	10	330	50	770	150	5,840
65–69	2,720	500	80	10	170	20	580	100	4,180
70–74	2,400	660	70	20	140	30	500	100	3,920
75+	2,390	1,180	90	30	250	60	440	120	4,560
Total	47,920	14,720	930	260	2,270	600	14,630	3,600	84,930

Note:

1. Figures include doctors active and inactive in medicine.
2. Individual entries may not add up to total because of rounding.

Source: CMRC.

The output from medical schools

6.1. The actual intake to and output from medical schools for years up to 1977 was provided by the University Grants Committee, as were estimated intakes for 1978 to 1980. For the basic projection it was assumed that the target intake of 4,080 places a year would be reached in 1983, and that the intake would remain at this level until the end of the century. Intakes for 1981 and 1982 were chosen to agree with possible developments at individual medical schools. The figures used for the basic projection are given in Table C2. Alternative projections were also made, based on an input of 3,500 from 1981, or of 4,500 from 1988, these being the earliest years by which a substantial decrease or increase in intake could reasonably be achieved.

Table C2 Intake to medical schools in Great Britain

Year[1]	Intake	Year	Intake
1970	2,878	1977[2]	3,740
1971	3,032	1978[3]	3,750
1972	3,123	1979[3]	3,750
1973	3,276	1980[3]	3,840
1974	3,281	1981[4]	3,920
1975	3,468	1982[4]	3,950
1976	3,650	1983 on	4,080

Note:

[1] Academic year starting in year shown.

[2] Provisional figure.

[3] UGC estimate (1977).

[4] Assumption made for the model.

[5] Figures differ slightly from those in Table A8, which incorporates more recent estimates from the UGC.

Source: UGC.

6.2. Although a breakdown of the intake by sex is available for years from 1961, the breakdown by place of birth is only available from 1973 to 1976. For the model, it was assumed that the proportion of medical students born in the various countries would be the same in future years as in 1973–1976, that is:

Great Britain	86·0%
Northern Ireland	0·9%
Irish Republic	0·2%
Elsewhere	12·9%

The overseas-born comprise two groups – those normally resident in Britain and those coming from abroad specifically to attend medical schools. It was assumed that the number in the latter category would remain at a constant 100 per year until the end of the century – the actual figure has varied from 93 to 113 since 1970, with an average very close to 100. It is possible that the proportion of medical students resident in Great Britain who were born abroad will increase in the future, as a reflection of immigration into Britain in recent years. This would not change the total number of graduates, however, and no attempt was made to include such an effect in the model.

6.3. Women medical students made up only 20% to 25% of the total medical school population because of limited entry quotas until the late 1960's. The proportion had reached 33% by 1974, when the Committee of Vice-Chancellors and Principals advised that any remaining quotas were inappropriate to modern conditions. In view of recent sex equality legislation and of the established increase in the numbers and proportion of women admitted to medical school, it was assumed that the proportion of women in the medical school intake would increase from the present figure to 50% by 1985. This assumption was applied separately to the British and Irish born, and to the overseas born normally resident in

Britain. The number of women coming from overseas specifically to attend medical school here reflects attitudes abroad rather than in this country, however, and it was therefore assumed that this number would remain at the 18 of 1974. An alternative projection was made assuming the proportion of women in the medical school intake would not rise above 40% (see paragraph 19.2 below).

6.4. The breakdown of the medical school intake by sex and place of birth which was assumed for 1975 and 1985 is given in Table C3. The proportions in intermediate years were obtained by linear interpolation, while the 1985 proportions were used in all subsequent years.

Table C3 Intake to medical schools in Great Britain: students in each category (place of birth and sex)

Year[1]	Place of birth							
	Great Britain		Northern Ireland		Irish Republic		Elsewhere	
	Male	Female	Male	Female	Male	Female	Male	Female
1975	55·3	30·7	0·5	0·4	0·1	0·1	8·7	4·2
1985	43·0	43·0	0·4	0·4	0·1	0·1	7·3	5·6

Note:

[1] Year beginning 1 October.

[2] Percentages may not add up to 100 because of rounding.

Source: 1975 figures derived from USR.

6.5. There are several factors affecting the relationship between the input to medical schools and the number entering the stock several years later:

a. Undergraduate wastage – in recent years about 9% of students admitted to medical schools have failed to obtain a first registrable qualification.

b. Doctors obtaining a registrable qualification (Conjoint examination, Scottish Triple Qualification, Licentiate of the Society of Apothecaries) without attending a medical school in Great Britain. There were 133 such doctors in 1977, 103 in 1976 and 137 in 1975; figures for earlier years are not available. Only a proportion of these doctors actually register in this country. It should be noted that a number of students at British medical schools obtain a non-university qualification either instead of, or in addition to, their degree. These students are included in the figures given in Table C2, and are not counted in the "wastage" above.

c. Doctors entering the army immediately after qualifying and thus leaving the stock we are looking at. In recent years, there have been about 60 of these per year.

d. Doctors who qualify but do not register because of marriage, emigration, etc., or doctors who register some years after qualification.

e. Variations in the length of the course. While most schools have a five-year course, others have a six-year course; in addition various schools have changed the length of the course recently.

f. Students taking an intercalated science degree, and thus qualifying one or more years late. Somewhat over 10% of students take intercalated degrees at present.

6.6. To take account of all these factors an "effective wastage" was calculated by comparing the intake to medical schools with the number of entrants to the CMRC index five years later. There is a difficulty here in that the place of birth of medical students is not known for years prior to 1973. Assumptions were made about the percentage of British born students in earlier years therefore based on the known percentage in the years 1973–1975, and these were then used to calculate an effective wastage for British and overseas born students from data on new entrants to CMRC in the years 1965 to 1972. The effective wastage rates for students born in Northern Ireland were based on the only available two years' data. The number of students from the Irish Republic was too small to allow a meaningful wastage rate to be calculated, and these rates were therefore assumed to be the same as those for Northern Ireland. The actual rates used were:

	GB-born	*Irish-born*	*Overseas-born*
Male	8·4%	20%	22%
Female	6·5%	20%	20%

(the figures give the proportion of new medical students who do *not* enter the stock five years later).

Age distribution of new entrants

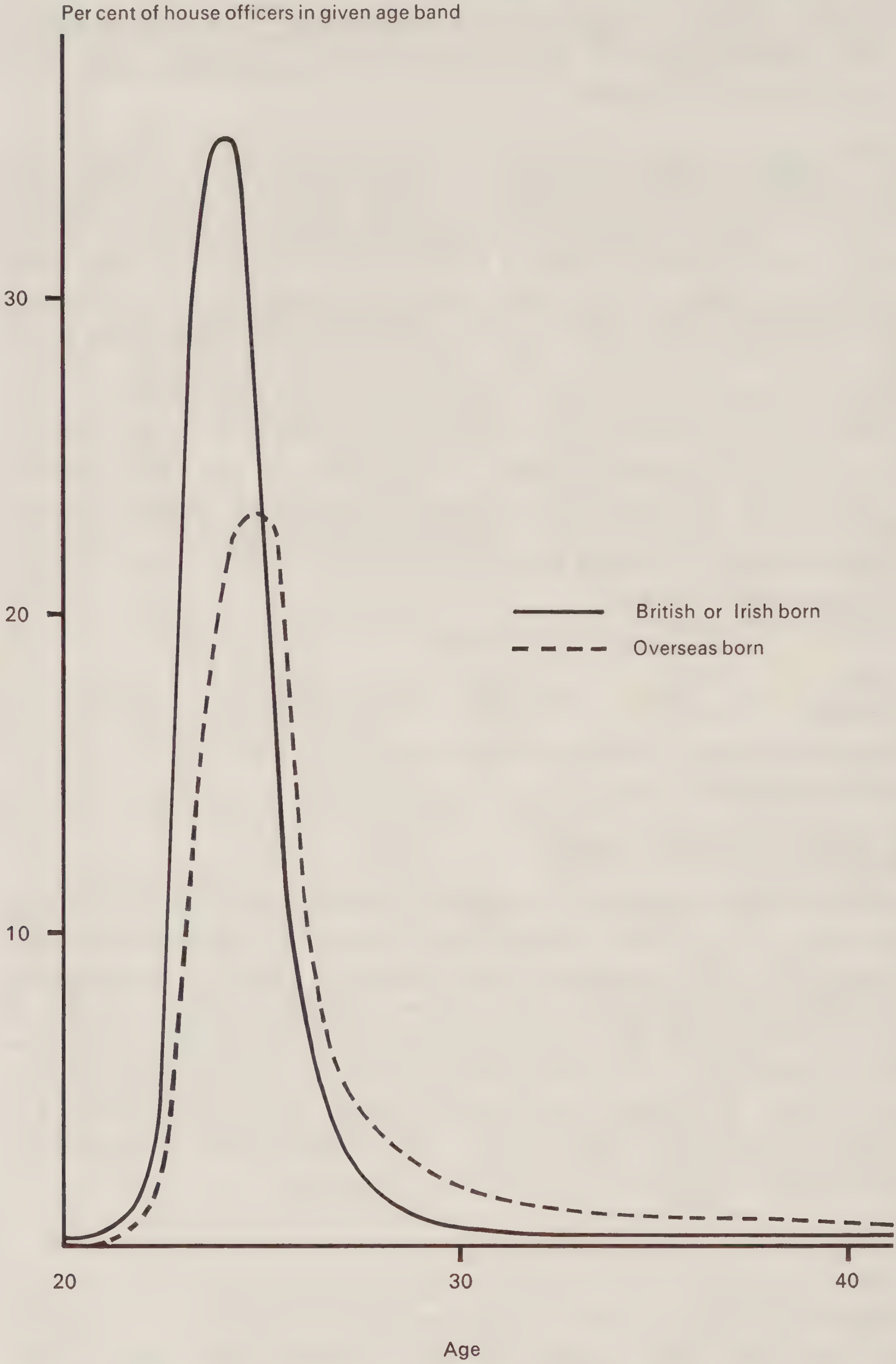
7.1. It was not assumed that all doctors graduated at one particular age. New entrants from medical schools were assigned to different age groups in accordance with the observed distribution of ages of pre-registration house officers in Great Britain for the years 1973 to 1976, as shown in Figure C2. Because of the small number of Irish house officers in these years, the data did not justify using separate figures for Irish doctors and the same distribution was used for British and Irish doctors. The difference between the sexes was not great enough to warrant separate distributions for males and females.

Deaths

8.1. The model calculates the likely number of deaths among the stock of a particular age group using death rates observed for registered doctors, based on CMRC data for 1965 to 1972. Separate rates were used for men and women, and for British and overseas born doctors.

8.2. Table C4 gives the age dependent death rates used in the calculation (the GB rates were used for Irish doctors). Those for males are very close

Figure C2 Distribution of ages of British graduates on qualifying



to those or all males in social class 1, while those for female doctors lie somewhere between those of single women in social class 1 and married women whose husbands are in social class 1. At any age, death rates for doctors are substantially lower than those for the total population.

Table C4 Death rates: analysis by sex and place of birth

Deaths per year per 10,000 in stock at a given age

Age	Males		Females
	British or Irish born	Born elsewhere	All places of birth
Under 25	6		6
25–29	8		7
30–34	11		9
35–39	15		12
40–44	23		17
45–49	39		25
50–54	66		37
55–59	107		56
60–64	182		91
65–69	330		152
70–74	632	563	282
75+	1,350	1,100	661

Source: Average rates for 1965–1972: derived from CMRC.

Migration – doctors born in Great Britain

9.1. Detailed information on the migration of British doctors is available since 1962 and shows that the number leaving the country each year has fluctuated within fairly wide limits while the number returning has changed rather less. Over any five-year period, however, the net outflow of British and Irish-born doctors has been fairly stable at about 300 to 400 a year. Estimates made for earlier years suggest that about this number have been leaving ever since the war and, in fact, that net outflow may have been at about this level for most of the century(28). These figures cover at least three separate processes:

a. Doctors going abroad for limited periods for postgraduate study or research.

b. Doctors moving permanently to developed countries in search of better pay or facilities.

c. Doctors going to less developed countries (either permanently or temporarily) as medical missionaries, as teachers in medical schools etc.

The first and last of these might be expected to continue at very much the present rate. It has been argued that the numbers in category (b) will decrease in view of recent restrictions on movement to North America, and the increasing production of doctors in Australia and New Zealand. Emigration is a complex phenomenon, however, and at present is much more marked in some specialties than others. Even if the overall demand for foreign trained doctors decreases in the countries mentioned, it is possible that there will continue to be a demand for British doctors in particular specialties.

9.2. Another complicating factor is the possibility of increased movement of British doctors to the EEC, following implementation of the directives on free movement. Most authorities who have studied this problem feel there is unlikely to be a large effect, but careful monitoring will be necessary. The important point to note here, however, as stressed in the text, is that fairly large changes in emigration produce comparatively minor changes in the stock. A total end to emigration, or a doubling of the net outflow from now until the end of the century would change the net stock in the year 2000 by less than 10% either way. This is not to imply that a change of this size would be unimportant, but it does mean that if drastic changes in the emigration rate do become apparent over the next few years, the necessary changes in the medical school intake to compensate would not be unreasonable and corrective action could be taken. For the basic projection, it was assumed that migration of British doctors would continue at the average rate of recent years, although alternative assumptions were tried.

9.3. For the model, it was assumed that a fixed proportion of the stock of British doctors in each age group would leave each year. The number in each age group coming back to this country was also expressed as a percentage of the stock of that age already here. The latter assumption is less justifiable, and it would have been better to calculate the number returning as a proportion of those overseas. This would have complicated the model considerably, however. It might be possible to justify our approach by noting that those returning are predominantly those in category (a) in paragraph 9.1. above, and the number of such doctors returning in a given year is related to the number who left in earlier years, which on our assumption is itself a fixed proportion of the relevant stock. Strictly speaking, this suggests that those coming back in a given year should be related to the stock some years earlier, but this would make little difference to the results.

9.4. The actual rates used are given in Table C5. As explained in paragraph 4.3, provisional figures suggest that the actual outflow in 1975 and 1976 was greater than that obtained using these rates.

Migration – doctors born in Ireland

10.1. Outflow of Irish-born doctors was treated in exactly the same way. For the inflow, it was assumed that a constant number (21 men and 7 women) would come to this country each year from Northern Ireland and similarly that a constant number (66 men and 26 women) would come from the Irish Republic each year. The numbers chosen are again based on those in recent years (1965–72) and these assumptions would obviously be sensitive to any substantial change in the output of Irish medical schools in the future. Net immigration from Ireland is sufficiently small, however, that no realistic assumption would lead to a substantially different total stock in Great Britain. The assumed emigration rates, by age, are shown in Table C6.

Table C5 Migration rates for doctors born in Great Britain: analysis by age and sex

Annual flows per 10,000 in stock at a given age

Age	Outflow		Inflow	
	Male	Female	Male	Female
Under 25	—	—	—	—
25–29	332	375	130	165
30–34	385	263	214	185
35–39	227	169	136	106
40–44	124	79	75	82
45–49	79	76	62	74
50–54	51	48	42	44
55–59	41	39	29	37
60–64	46	44	23	43
65–69	50	44	22	31
70–74	25	26	16	20
75+	25	26	16	20

Source: Average flows for 1965–1972: derived from CMRC.

Table C6 Emigration rates for Irish and overseas born doctors: analysis by age, sex and place of birth

Annual flows per 10,000 in stock at a given age

Age	Place of birth					
	Northern Ireland		Irish Republic		Elsewhere	
	Male	Female	Male	Female	Male	Female
Under 25	—	—	—	—	—	—
25–29	660	1,160	1,040	860	740	680
30–34	1,510	1,030	1,140	710	1,340	1,070
35–39	970	240	760	500	1,380	980
40–44	170	200	290	280	870	520
45–49	90	150	160	200	460	270
50–54	60	120	110	160	220	160
55–59	50	110	90	150	140	60
60–64	60	120	100	160	90	80
65–69	70	130	120	180	80	40
70–74	60	80	110	120	60	50
75+	50	40	90	60	60	20

Source: Average flows for 1965–1972: derived from CMRC.

10.2. The age distribution of the immigrants was calculated by allocating a fixed proportion of the inflow to each age group – again based on CMRC data for 1965 to 1972. The proportions used are given in Table C7.

Table C7 Age distribution of inflow: analysis by age, sex and place of birth

Percentage of inflow in given age band

Age	Place of birth					
	Northern Ireland		Irish Republic		Elsewhere	
	Male	Female	Male	Female	Male	Female
	%	%	%	%	%	%
Under 25	—	—	—	—	—	—
25–29	24	43	54	46	42	49
30–34	36	23	18	12	34	28
35–39	15	11	8	13	13	12
40–44	9	11	7	13	5	5
45–49	5	5	5	6	3	3
50–54	4	2	4	5	1	1
55–59	3	1	2	2	1	1
60–64	2	1	1	1	1	1
65–69	1	1	1	2	0	0
70–74	1	1	0	0	0	0
75+	0	1	0	0	0	0

Source: Average percentages for 1965–1972: derived from CMRC.

Migration – doctors born overseas

11.1. As explained in the main text (Section V.C) the number of doctors coming from abroad in future years is determined not only by factors outside this country, but also by policy decisions on the extent to which we should meet our needs for doctors with graduates of British medical schools. As argued in paragraph 76, it may be more sensible to regard future inflow as the output from a projection rather than as one of the inputs. The two projections that were made were designed to illustrate particular aspects and are in no sense a prediction of the future. Specifically, the two assumptions made were:

a. that inflow will be zero in future years

b. that net inflow will be zero – that is, that the number entering will balance the number leaving year by year.

In each case, the age distribution of immigrants was determined as in paragraph 10.2 above, and is given in Table C7. For the sake of definiteness the average of these two was used for the basic projection.

11.2. It is not completely straightforward to decide what assumption should be made about outflow of overseas born doctors in future years. In broad terms, overseas doctors here at present fall into two groups – those who came for a limited time only for postgraduate training, and those who came to stay permanently (although there is, of course, no firm division and doctors may be undecided how long they will stay, or may change their minds). The probability of a doctor in the first group deciding to leave is obviously much higher than that for a doctor in the second group and observed rates of outflow in the past are some weighted average of the rates for the two groups. A drastic change in inflow – as would be implied by either of the assumptions above – would lead in time to changed proportions in the two groups and hence to changed rates of outflow. It would be possible to include this effect in the model, but at present the data is not available to make this worthwhile and it was assumed that rates of outflow would be those observed in recent years (as set out in Table C6). In qualitative terms, at least, the more detailed approach would not change the general trends calculated on this assumption.

Withdrawals for other reasons

12.1. Other outflows from the stock of registered doctors in Great Britain were calculated using age dependent rates estimated from the CMRC data for 1965 to 1972, as given in Table C8. A negative number in the table indicates net inflow (for example, from the armed forces).

Table C8 Withdrawal rates for other reasons: analysis by age, sex and place of birth

Annual net outflow per 10,000 doctors in stock at given age

Age	Place of birth							
	Great Britain		Northern Ireland		Irish Republic		Elsewhere	
	Male	Female	Male	Female	Male	Female	Male	Female
Under 25	—	—	—	—	—	—	—	—
25–29	40	10	60	100	−100	50	10	10
30–34	−50	10	40	60	−80	30	25	20
35–39	−20	12	10	30	−40	20	40	40
40–44	−10	8	−10	0	−30	0	10	5
45–49	−8	4	−20	−20	−20	0	0	−10
50–54	−12	15	−20	−20	−10	0	−15	40
55–59	−18	20	−20	−20	0	10	−25	40
60–64	−14	16	−10	0	10	20	−10	20
65–69	0	6	0	30	10	40	5	10
70–74	14	10	10	80	20	50	30	0
75+	30	18	40	150	20	70	40	0

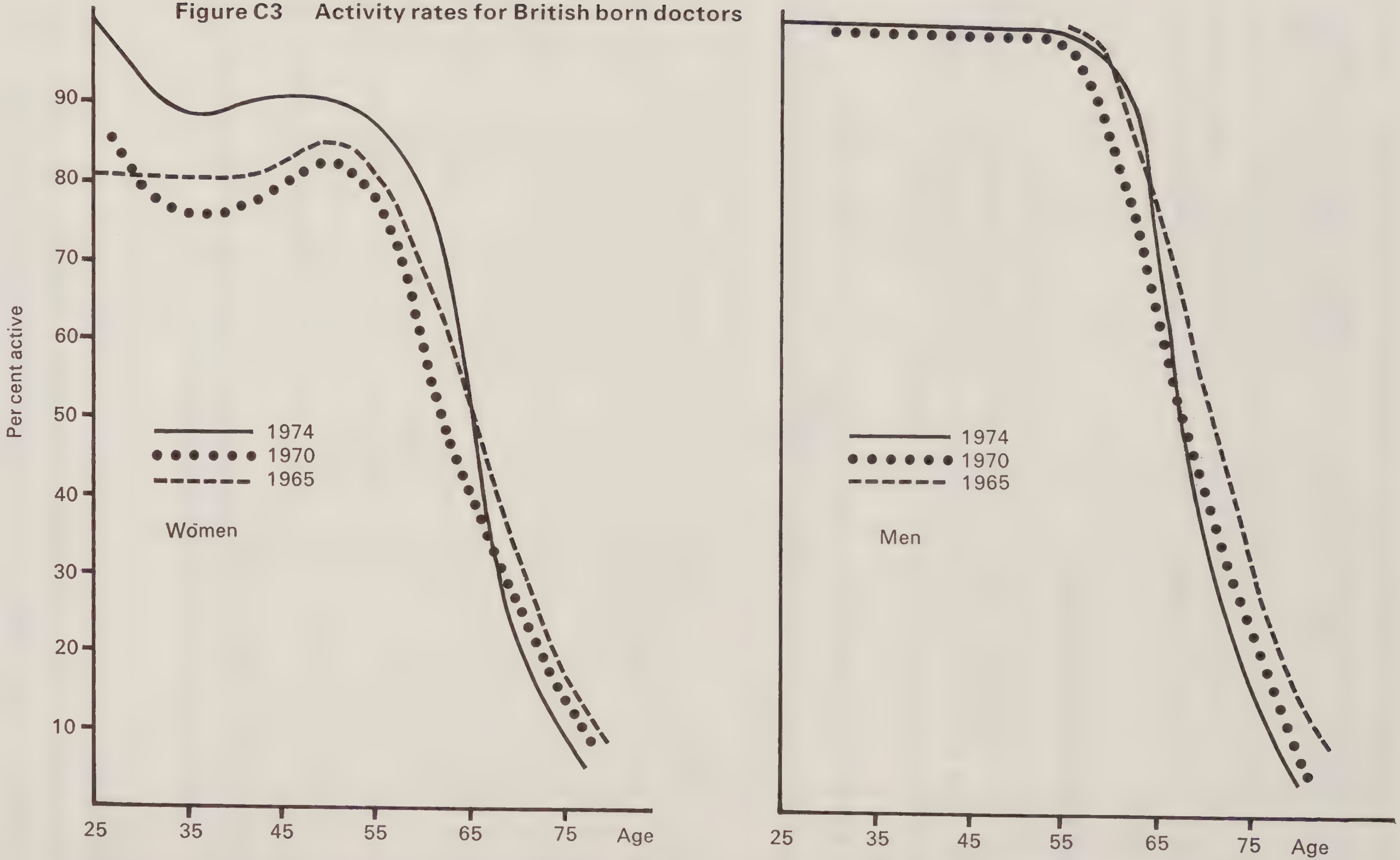
Note:
1. A negative entry indicates a net inflow.
2. The flows on which these rates are based are small so that estimation errors are large.

Source: Average flows for 1965–1972: derived from CMRC.

Activity rates

13.1. The CMRC index classifies doctors as "active in medicine" (that is, engaged in any regular medical work) or "inactive", and this data can be used to calculate activity rates (that is, the proportion active) at different ages. The observed activity rates of British-born doctors in 1965, 1970 and 1974 are shown in Figure C3. It is clear that there has been a definite change in activity over this period and this presents obvious problems in making projections. The problems are rather different at the upper end of the age range, and we consider these first.

Figure C3 Activity rates for British born doctors



(Source : 1965 data from Todd Commission ; 1970 and 1974 from CMRC Index.) Figures are for the percentage active in each age group. The 1965 figures were collected on a different basis from later years.

Age of retirement

13.2. The Willink Committee expected a trend to earlier retirement as NHS pension rights matured, and their estimates were endorsed by the Todd Commission. Table C9 shows the activity rates projected by the Commission, with the actual 1974 rates for comparison.

13.3. Two points emerge from the table:

a. Activity rates in the 60 to 65 age group have increased since 1970 and are substantially higher than the Todd expectation.

b. Activity rates for the age groups over 65 are falling much more rapidly than suggested by Todd.

In brief, there appears to be a tendency to 65 as the age of retirement.

13.4. For the basic projection, activity rates for all categories (that is, for all places of birth and for both sexes) were chosen to reflect this trend. That is, activity rates above 65 years old were taken to start at their observed values in 1974, and to decrease linearly to half those values by 2000. This provides a rough model of a trend to 65 as a "universal" retirement age. Because most doctors over the age of 65 decrease their work load as they get older, the whole time equivalent contribution of doctors in this group is not large and different assumptions about retiring age would not make a major difference to the total work-force. (See paragraph 18.1 below.)

Table C9 Activity rates

Percentage active in medicine at age shown

Age	Male					Female				
	Projected by Todd Commission				Observed value in 1974[1]	Projected by Todd Commission				Observed value in 1974[1]
	1975	1980	1985	1990		1975	1980	1985	1990	
60–64	85	83	82	80	91	58	57	56	55	69
65–69	53	47	41	35	51	34	31	28	25	29
70–74	33	29	24	20	24	20	18	16	14	13
75+	17	14	12	10	9	10	9	8	7	6

Note:

[1] Derived from CMRC data for British born doctors.

Part time working

14.1. The CMRC Index does not contain information on the number of hours worked and in fact there is comparatively little data available to enable a whole time equivalent work force to be estimated. (To avoid any possible misunderstanding, it is worth stressing that in this study a part timer is a doctor whose *total* medical work is less than full time. In other words, a doctor working half time in the NHS and doing other medical work half time outside the NHS would count as full time for this paper). Information is available from the 1971 census(29) about the number of hours worked per week, but as this is based on a 10% sample of the whole population, the number of doctors of a given age in the sample was small, so that uncertainties in the figures may be large. There does not seem to be any other information on part time working by men doctors. For Women doctors, the only comprehensive study is the Medical Practitioners Union survey(30) by P M Elliott and M Jeffreys (referred to as the MPU survey for brevity) which covered all active doctors resident in Great Britain in 1962. A somewhat more limited survey of women doctors graduating at Sheffield(31) gives rates for part time work in 1968 which are broadly comparable with those in the MPU survey but there does not seem to be any more up-to-date information on this subject apart from the census. DHSS has commissioned a new research study of the activities of women doctors, but it will be some time before the results of this are available.

14.2. In view of the marked change in overall activity rates in recent years, it is not clear how much reliance should be placed on figures which are at least seven years out of date. There is a much more important problem here, however – these surveys indicate what proportion of doctors are actually active or are working part time, but this is not necessarily the same as the number who are available for work or who would choose part time work. It is likely that with more opportunities for part time work many of the doctors not active at present would be active; conversely, some of those active full time might prefer part time work if it was available. In fields other than medicine the extent of female participation in the labour force is affected by the demand for labour as much as by the proportion of women who wish to work. This suggests that the available supply (which is what the study is trying to estimate) could well be greater than the actual whole time equivalent work force at present.

14.3. For illustrative purposes, a whole time equivalent work force was calculated for each year of the projection assuming that a fixed proportion of active doctors of each sex and each age would be working part time throughout the period of the study, and that the average amount of work done by each of these part time doctors would remain constant. It is clear from what has been said already that not too much reliance should be placed on these figures – they were calculated only to give an illustration of the way in which the changing sex and age distribution in the stock of doctors is reflected in changes in the effective work force.

14.4. The actual figures used in the calculation for the percentage of the actual stock working part time are given in Table C.10 – the figures were obtained from the 10% sample in the 1971 census (defining a part timer for this purpose as one who works 36 hours per week or less, excluding overtime and meal breaks). It is also necessary to have a figure for the number of hours actually worked by the average part timer. Again, these were taken from the 1971 census, and the actual whole time equivalent of a part time doctor was taken to be 0·64 for a man and 0·44 for a woman.

Table C10 Part-time working

Percentage of active stock working part time at age shown

Age	Males	Females
Under 25	4	(6)
25–29	3	27
30–34	2	39
35–39	3	47
40–44	5	44
45–49	6	48
50–54	7	44
55–59	7	(45)
60–64	16	(46)
65–69	48	(72)
70–74	(54)	(77)
75+	(67)	(100)

Note:

1. In cases where the sample analysed contained less than 100 doctors of the specified sex in a given age band the percentage is bracketed.

Source: Unpublished data from 1971 census.

14.5. All of these figures refer to the beginning of the period under consideration; and it is necessary to make some assumption about how they will change over time. For men, it was assumed that activity rates (and the proportion working part time) at ages below 65 would not change over the period of the projection. Three different assumptions were tried for female activity rates in the future:

a. The activity rate and the proportion working part time remaining at their 1974 values.

b. The activity rate for women equal to that for men but the proportion working part time remaining at the 1974 female value.

c. Both the female activity rate and the proportion of women working part time equal to the corresponding quantities for men.

The first of these would be a continuation of the status quo, while the third represents the maximum feasible contribution of women and might be expected to arise only in a situation of extreme shortage. In a sense, the second represents the trend of present policies which are designed to encourage as many women as possible to work, rather than to encourage part timers to increase their hours.

14.6. For the basic projection, it was assumed that activity rates of women below 65 would increase linearly from those in a. above in 1975 to the average of a. and b. by 2,000. Again, this is only a very crude model of possible changes over time and a wider detailed range of possibilities is discussed in Section C below (paragraph 17.4). The observed 1974 activity rates used for the calculation are given in Table C11.

C. RESULTS

15.1. The main results from the model are summarised in Section V of the text. In this Section, we look at certain aspects of the basic projection in more detail, and discuss the effects of varying the assumptions. It should be remembered that figures for overseas-born doctors given in the main text include temporarily registered doctors, while this Section refers to fully and provisionally registered doctors only.

Table C11 Activity rates: analysis by age, sex and place of birth

Percentage of stock at given age active in medicine in 1974

Age	Males			Females		
	Great Britain	Ireland	Elsewhere	Great Britain	Ireland	Elsewhere
Under 25	100	100	100	100	100	100
25–29	100	100	100	97	99	99
30–34	100	100	100	89	97	96
35–39	99	99	99	89	95	94
40–44	99	99	99	90	93	93
45–49	99	99	99	90	91	92
50–54	99	99	98	89	91	91
55–59	98	98	98	85	92	87
60–64	91	94	95	69	82	82
65–69	51	56	64	29	49	51
70–74	24	34	32	13	21	22
75+	9	19	21	6	8	9

Source: Derived from CMRC.

Age distribution of stock

16.1. The distribution of the stock of doctors by age in 1974, 1990 and 2000 on the basic projection is shown in Figure C4. A prominent feature of the distribution is the high proportion of young doctors in 1990 reflecting the rapid build-up of the medical school output. Thus, nearly 40% of active doctors will be under 35 in 1990 on the central projection, compared with 32% in 1974. Put another way, the projected increase in the total number of doctors between 1974 and 1990 is 18%, but the increase in those over 30 is 11% while the increase in those over 35 is only 4%.

16.2. These figures are important in the context of career structure, since ultimately the medical school intake should be related to the future demand for fully trained doctors. A point that is often overlooked in comparing these two is that the number of doctors available to fill career posts in a given year is related to the number of graduates several years earlier. The figures just quoted show that it will be well into the latter half of the 1980's before the increase in graduates is reflected in a corresponding increase in the number of doctors available to take career posts.

Activity rate

17.1. Table C12 gives a breakdown of the *total* stock on the basic projection showing both active and inactive doctors, while Table C13 shows what proportion of the active stock are working full time. As explained in paragraph 14.2 above, activity rates and rates of part time working may be sensitive to social and economic factors and these figures should be regarded as illustrative only. With this caveat, it is interesting to look at changes in part time working over the period considered.

Table C12 Total stock on basic projection

Thousands

Year	Active in medicine	Inactive	Total
1974	73·2	11·7	84·9
1985	81·2	14·5	95·7
1990	86·7	17·6	104·4
1995	92·2	18·0	110·2
2000	98·4	18·7	117·1

Note:
1. Fully and provisionally registered doctors only.
2. Entries may not add up to total because of rounding.

Table C13 Active stock on basic projection

Thousands

Year	Males		Females		Total	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
1974	53·4	4·6	9·1	6·2	62·4	10·8
1985	54·2	4·6	13·8	8·6	68·1	13·1
1990	54·5	4·5	17·2	10·5	71·7	14·9
1995	54·8	4·3	20·4	12·7	75·3	17·0
2000	55·8	4·1	23·4	15·1	79·2	19·2

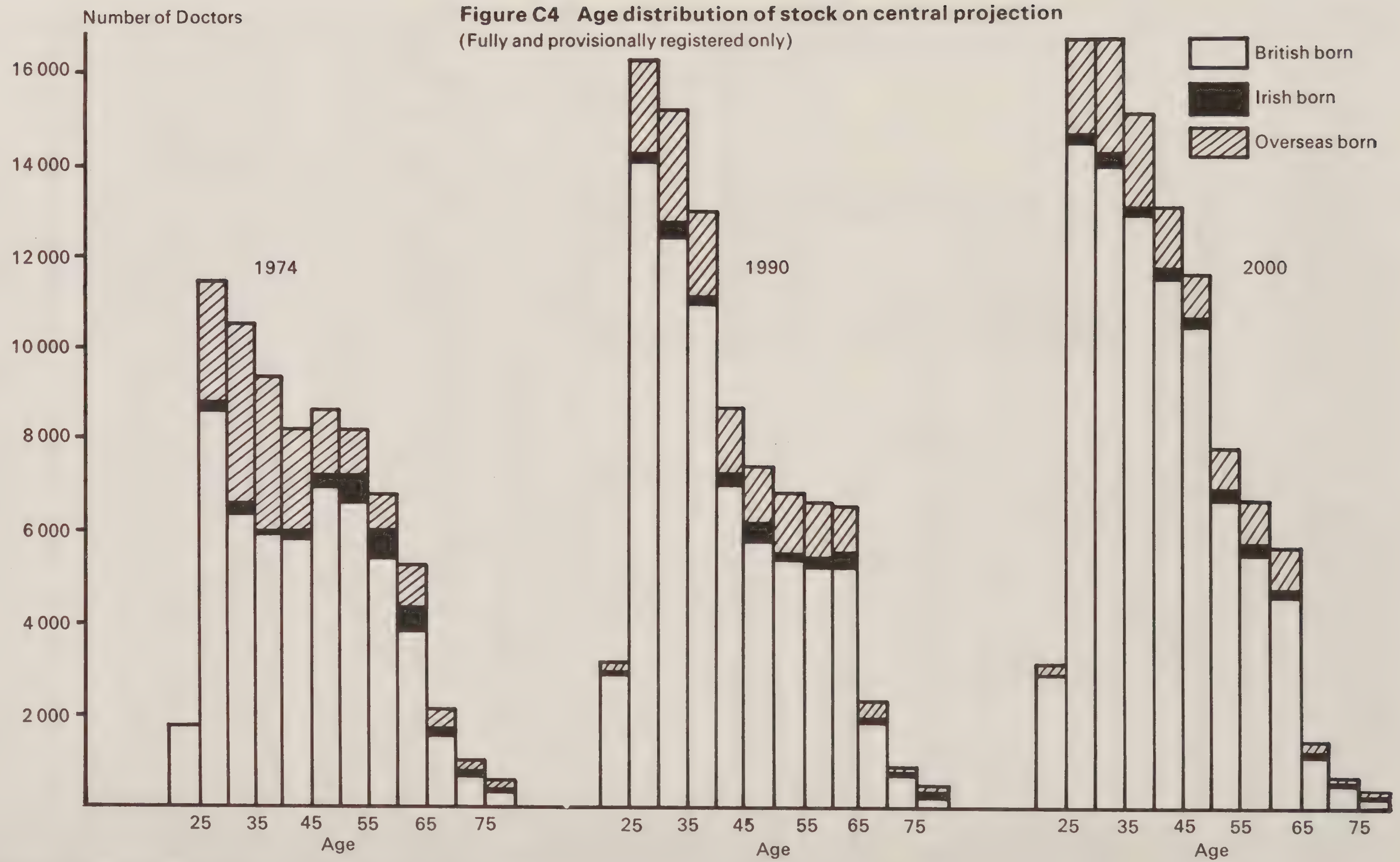
Note:
1. Fully and provisionally registered doctors only.
2. Entries may not add up to total because of rounding.

17.2. On the basic projection, the proportion of doctors working only part time increases steadily from 15% in 1974 to nearly 20% by the end of the century. Approximately 60% of these part timers were women in 1974 (the rest being largely men approaching retirement); by 2000, however, 80% of the part timers will be women.

17.3. It is generally recognised that as a result of the increasing proportion of female medical students, fairly substantial changes in the organisation of postgraduate medical education will be necessary. By the end of the century, perhaps one doctor in five or six undergoing training will be doing so part time. It is worth remarking, however, that the changes required in the organisation of medical services are rather less. By the year 2000, for example, the proportion of all medical work carried out by part timers will only have reached 10% (compared with 8% in 1974).

17.4. In view of the uncertainties of projections of activities, it is worth looking at alternative assumptions in some detail. Table C14 shows the number of active women doctors, and their whole time equivalents for

Figure C4 Age distribution of stock on central projection
(Fully and provisionally registered only)



the three alternative assumptions described in paragraph 14.5, with the basic projection for comparison.* The implications of these figures are discussed in paragraph 85 of the main text.

Table C14 Effects of different assumptions about activity rates on stock of British born female doctors

Active female doctors born in Britain (Thousands)

Activity rate assumed for females	1974 Female rate		1974 Male rate		1974 Male rate		Basic projection	
Proportion working full-time	1974 Female proportion		1974 Female proportion		1974 Male proportion			
Year	No	wte	No	wte	No	wte	No	wte
1975	11·8	9·4	12·9	10·3	12·9	12·6	11·8	9·1
1985	18·3	14·4	20·0	15·8	20·0	19·6	18·6	14·7
1990	23·0	18·2	25·1	19·8	25·1	24·6	23·6	18·6
1995	27·8	21·8	30·3	23·8	30·3	29·7	28·8	22·6
2000	32·4	25·3	35·4	27·6	35·4	34·8	33·9	26·5

Retirement ages

18.1. The size of the total stock on various assumptions about retirement ages is given in Table C15. Again, the implications of these figures are discussed in the main text (paragraphs 84 and 87).

Table C15 Effect of different assumptions about retirement age

Active doctors[1]

Year	1974 activity rates maintained[2]	No doctors active beyond 65[2]	No doctors active beyond 60[2]	Return to 1965 activity rates[2]	Basic projection
1985	75·4	72·2	66·9	76·8	74·7
1990	80·2	76·7	71·2	81·8	79·2
1995	84·9	81·4	76·8	86·7	83·6
2000	89·9	86·9	82·4	91·5	88·4

[1] All places of birth, fully and provisionally registered only.

[2] In all cases, activity rates below age 60 or 65 are taken to be the same as for the central projection; headings refer to activity rates above age 60 or 65.

Changes in the medical school intake

19.1. To illustrate the possible changes that might be achieved by a decision to increase or reduce the intake to medical schools, two alternative

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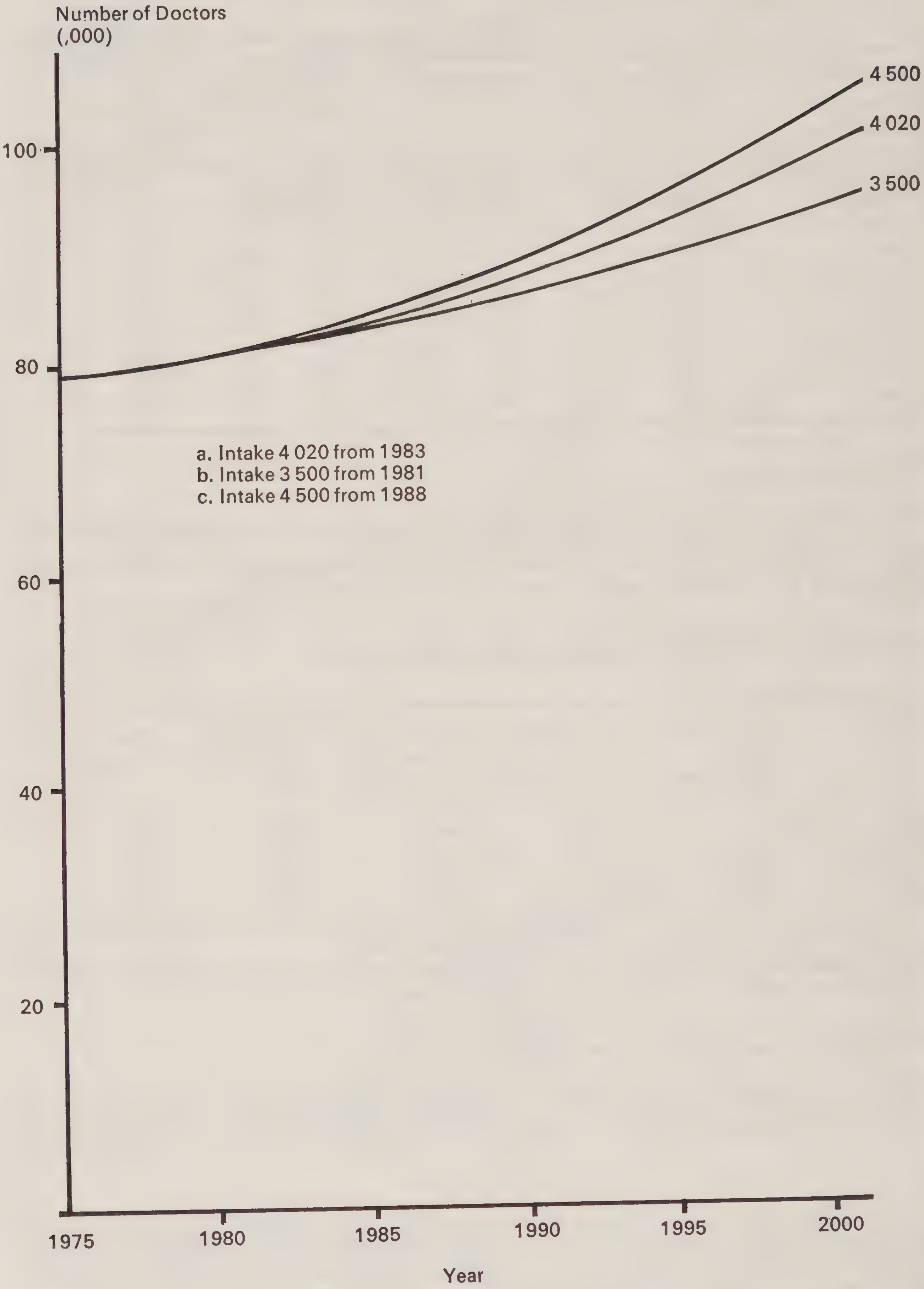
*These figures refer to British-born doctors only. Projections relating to overseas doctors have a larger measure of uncertainty because of the limited information available on temporarily registered doctors, so that alternative projections seem less worthwhile, and Irish-born doctors constitute such a small proportion of the stock that quite large changes in the assumptions for this group make a negligible difference to the total. The figures quoted in the main text were obtained by assuming that the percentage difference in the total stock under one or other of the assumptions considered here was the same as the percentage difference in the British-born stock.

Figure C5 Stock of doctors on different assumptions about medical school places



Note: The results are the average of the "nil immigration" and the "nil net immigration" projection in each case.

projections were made on the basis that the intake will be cut to 3,500 in 1981 and will remain at this level thereafter, or that it will be increased to 4,500 in 1985 and again will remain at this level thereafter. The effect of these on the total stock (including temporarily registered doctors) is shown in Figure C5.

19.2. It has been suggested that the proportion of women admitted to medical schools might increase rather more slowly than suggested for the central projection. To see the effect of this, one projection was made on the basis that only 40% of medical students would be women from 1985 onwards. Although this obviously produces a fairly large difference in the proportion of women in the final stock, the effect on the total number of doctors is very small – an increase of just over 1% in whole time equivalent terms by the year 2000, and virtually no change in total numbers.

D. TEMPORARILY REGISTERED DOCTORS

20.1. For the reader who is not familiar with the present procedures for registration, some background may be helpful.* Doctors who qualify in this country become eligible for full registration after a period of experience in hospital, and a limited number of overseas qualifications are recognised for the purpose of full registration here. Since 1977, doctors who are EEC nationals and who hold medical qualifications obtained in the EEC are also eligible for full registration. All other doctors are eligible only for temporary registration. Despite the name, there is at present no limitation on the length of time for which a doctor may be temporarily registered, but a certificate of temporary registration is issued only for specified employment in a particular post and when the doctor concerned moves to another post he must apply for a new certificate.

20.2. In general, the available information on temporarily registered doctors is less detailed than that on fully registered. Although details of such doctors are being included in the CMRC index for years from 1974, there are no "historic" data to establish long-term trends on flows. The information which is available is summarised below.

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*The situation described here will be changed substantially when the Medical Act 1978 is fully implemented, and no new grants of temporary registration will be made. From the point of view of the present paper, this will not make an important difference, and the figures given here for temporarily registered doctors in future years should be interpreted as referring to doctors holding overseas qualifications not at present recognised as fully registrable.

20.3. The number of certificates of temporary registration issued each year is available from the General Medical Council, and the Department has analysed details of the certificates issued in 1974 and 1975. The following general features are of interest:

a. The number of certificates issued is substantially higher than the number of doctors concerned. That is, individual doctors may be issued several certificates in the same year and the periods of validity of different certificates often overlap. It is clear, therefore, that the existence of a valid certificate does not necessarily imply that the doctor concerned actually holds the post described by the certificate.

b. A number of the doctors concerned have entered and left the country several times since their first arrival here.

c. While a small proportion of doctors with temporary registration hold permanent posts of unlimited tenure, many hold posts only briefly. In particular, there appear to be a number of doctors who take a series of short-term locum posts and who may not be working for a significant fraction of the time.* There is also reason to believe that a fairly large number of doctors with temporary registration are academics or research workers from abroad spending their summer at British teaching hospitals.

It should be pointed out that 1975 may have been an anomalous year, as it was the year that testing of applicants for temporary registration was introduced and there seems to have been a larger than usual inflow before the test became a requirement.

20.4. Details of temporarily registered doctors holding hospital posts in the NHS are available from the annual census of NHS medical staff. Figures for the number of such doctors in recent years are given in Table C16. Because these figures give a snapshot view on a single day, however, they do not include doctors who are between jobs on that day – as suggested above, the number of such doctors may be fairly large.

20.5. Apart from certain specific exemptions, doctors from overseas coming to Britain for the first time are required to spend a period of clinical attachment in the NHS. Figures for the number of attachments and exemptions are available and give an indication of immigration of overseas doctors (both fully and temporarily registered); they do not represent total inflow, however, as they take no account of doctors from abroad returning after a period of absence.

20.6. Information is also available on the length of time spent by temporarily registered doctors in a particular grade in the NHS, and on movement into and out of these grades (or, more exactly, on doctors who are working in the NHS on census day one year but not on census day in the preceding or following year). This suggests that a significant proportion of temporarily registered doctors spend less than three years in all in the NHS.

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*Strictly speaking, these doctors are not temporarily registered while they are between jobs. They should obviously be included in the stock of doctors available for medical work, however, and we shall refer to them as temporarily registered doctors.

Table C16 Temporarily registered doctors in the hospital service by grade, 1971–1977 (Great Britain)

As at 30 September	Total	Senior Registrar and above	Registrar	Senior House Officer	House Officer
1971	1,860[1, 2]	70[2]	590	1,030	160
1972	2,360[2]	90[2]	690	1,390	200
1973	3,160[2]	110[2]	840	1,940	260
1974	3,750	130	1,040	2,340	240
1975	4,280	190	1,240	2,620	230
1976	4,000	260	1,390	2,240	120
1977	3,670	320	1,430	1,840	70

[1] Includes 1 Junior Hospital Medical Officer.

[2] Estimated.

[3] Individual entries may not add up to total because of rounding.

Source: DHSS.

20.7. The general picture emerging from all these figures is of an annual inflow of perhaps 1,500 to 2,500 doctors and an annual outflow of perhaps 1,200 to 2,200. The number of doctors holding valid certificates of temporary registration at 30 September 1975 was 6,200. This figure must be corrected for certain doctors who were also fully registered at that date, for those holding certificates who had in fact left the country, and for those in the country but not holding certificates. It is possible to estimate the size of these corrections from information for previous years, and taking account of all these factors as well as possible gives an estimate of 5,700 temporarily registered doctors active in medicine in Britain. All of the figures in this paragraph should be regarded as approximate.

20.8. Since information on the present position regarding these doctors is limited, any projection must be regarded as little more than illustrative. As in the case of fully registered doctors, two assumptions were made – nil immigration and nil net immigration. In the latter case, the stock of active temporarily registered doctors in the country will decline slowly due to deaths and retirements. Since there will be a fairly steady turnover as doctors leave and are replaced by others, however, the number of deaths or retirements should be comparatively small. It was assumed therefore that in this case the stock would decline steadily from 5,600 in 1975 to 4,500 in 2000 as shown in Table C17. In the case of nil immigration, the chief factor affecting the stock would be emigration, and it seems likely that the numbers would decrease rapidly initially and more slowly thereafter. The figures given in Table C15 describe this trend.

Table C17 Assumed stock of temporarily registered doctors

Numbers

Year	Nil immigration	Nil net immigration
1975	5,600	5,600
1980	3,500	5,300
1985	2,000	5,100
1990	1,500	4,900
1995	500	4,700
2000	500	4,500

20.9. It is clear that the figures in Table C17 should be regarded as rough estimates only. It is unlikely, however, that any of them could be in error by much more than 1,000 or 1,500. Though this is a fairly large uncertainty here, it corresponds to only 1% or 2% of the total stock and the overall uncertainties in the figures for fully and provisionally registered doctors are certainly of this order.

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